EPA'S RESPONSE TO COMMENTS ON
DRAFT AGUADILLA REGIONAL WASTEWATER TREATMENT PLANT
NPDES PERMIT (NO. PR0023736)
WITH MODIFIED SECONDARY TREATMENT REQUIREMENTS PURSUANT TO
SECTION 301(H) OF THE CLEAN WATER ACT

On August 21, 2000, the United States Environmental Protection Agency (EPA) public noticed the proposed National Pollutant Discharge Elimination System (NPDES) Permit for a modification to secondary treatment requirements pursuant to Section 301(h) of the Clean Water Act (CWA) and 40 Code of Federal Regulations (CFR) Part 125, Subpart G, for the Puerto Rico Aqueduct and Sewer Authority's (PRASA) Aguadilla Regional Wastewater Treatment Plant (RWWTP). The public hearing was held on September 21, 2000. The comment period on the proposed Aguadilla decision ended on November 6, 2000.

According to 40 CFR §124.17, at the time that any final permit decision is issued under §124.15, EPA shall issue a response to comments. This response shall (1) specify which provisions, if any, of the draft permit have been changed in the final permit decision, and the reasons for the change; and (2) briefly describe and respond to all significant comments on the draft permit raised during the public hearing and public comment period.

The provisions in the draft permit which have been changed in the final permit decision and the reasons for those changes are included in this response to comments.

All comments, both in English and Spanish, received during the public comment period have been reviewed and considered in this final permit decision. Attachment 1 is a list of commenters who submitted comments during the public comment and hearing periods.

I. Summary of EPA's Findings:

On August 21, 2000, EPA initiated public notice of its draft final decision to approve the Aguadilla RWWTP 301(h) application for a waiver from the requirements of secondary treatment. As outlined in EPA's August 10, 2000 Aguadilla 301(h) Decision Document (EPA 2000b), PRASA has demonstrated that the Aguadilla RWWTP is in compliance with the following statutory and regulatory 301(h) criteria:

1. The modified discharge will not cause violations of the Commonwealth of Puerto Rico water quality standards (WQS) for dissolved oxygen, turbidity, or pH. [Section 301(h)(1), 40 CFR 125.61]

2. The applicant's modified discharge will not impact public water supplies. The discharge will not interfere with the protection and propagation of a balanced indigenous population (BIP) of marine life. Recreational activities will not be impacted. [Section 301(h)(2), 40 CFR l25.62]

3. The applicant has established an adequate monitoring program to assess the impact of its discharge. The terms of this program will become enforceable conditions of the modified permit to be issued to the applicant. [Section 30l(h)(3), 40 CFR l25.63]

4. The proposed discharge will not result in additional treatment requirements on any other point or nonpoint sources. [Section 30l(h)(4), 40 CFR l25.64]

5. The applicant has developed an industrial pretreatment program which was approved in September 1985 by the Region. The program has been implemented on an island-wide basis. [Section 301(h)(5), 40 CFR 125.66 and 125.68]

6. The applicant has demonstrated, in its quarterly pretreatment program compliance reports, that it has met the urban area pretreatment requirements. [Section 301(h)(6), 40 CFR 125.65]

7. The applicant has proposed an adequate schedule of activities intended to limit the entrance of toxic pollutants from nonindustrial sources into the treatment works. The Aguadilla RWWTP 301(h) modified permit will require that PRASA modify, as necessary, and implement this program within 12 months of EPA's issuance of the Aguadilla RWWTP permit. [Section 30l(h)(7), 40 CFR l25.66]

8. There will be no new or substantially increased discharges from point sources of the pollutants to which the variance applies above those specified in the permit. [Section 30l(h)(8), 40 CFR 125.67]

9. The discharged effluent will receive at least primary or equivalent treatment and meet the criteria established under Section 304(a)(1) of the Act after initial mixing. [Section 301(h)(9), 40 CFR 125.60].

Since the Aguadilla 301(h) Decision Document was prepared in August 2000, the Aguadilla RWWTP has continued to be in compliance with the above criteria. In addition, as required under 40 CFR §125.59 (a) (3), a 301(h) applicant must demonstrate compliance with "...applicable provisions of State, local or other Federal laws or Executive Orders. This includes compliance with the Coastal Zone Management Act of 1972, as amended, 16 U.S.C. 1451 *et seq*.; the Endangered Species Act of 1973, as amended, 16 U.S.C. 1431 *et seq*.; and Title III of the Marine Protection, Research and Sanctuaries Act, as amended, 16 U.S.C. 1351 *et seq*..." EPA finds that PRASA has demonstrated such compliance. In addition, both the RWWTP and outfall performance will be closely monitored through the Puerto Rico Environmental Quality Board's (PREQB) required mixing zone validation studies and EPA's required 301(h) post-waiver monitoring programs and monthly Discharge Monitoring Reports (DMRs), all of which are included as requirements of this 301(h) modified NPDES permit.

The NPDES permit review and renewal cycle is five years. However, if at any time during a 5-year permit period EPA determines that the RWWTP is no longer in compliance with the

301(h) requirements and is endangering or harming the marine environment/biota, EPA may reevaluate its decision, issue a 301(h) denial and modify or terminate the permit and require the achievement of secondary treatment within a specific time frame.

II. EPA's Response to Specific Comments Received During the Public Comment and Public Hearing Periods:

A Compliance with CWA, Including Secondary Treatment Requirements:

1. Comment: A number of commenters state that they are opposed to EPA granting the Aguadilla RWWTP a 301(h) waiver and state that EPA should require construction of secondary treatment facilities.

1. EPA Response: EPA's approval of the Aguadilla RWWTP 301(h) modification to the requirements of secondary treatment is based on PRASA's demonstration that the Aguadilla RWWTP meets all nine 301(h) requirements as implemented by regulations contained in 40 CFR Part 125, Subpart G, including compliance with all applicable Commonwealth WQS and EPA marine criteria, which assure the protection and propagation of a Balanced Indigenous Population (BIP) of fish, shellfish and wildlife, and human health in the vicinity of the Aguadilla RWWTP ocean outfall.

2. Comment: EPA should force the government of Puerto Rico to comply with environmental laws.

2. EPA Response: EPA has taken, and will continue to take, as necessary, timely and appropriate enforcement actions to ensure PRASA's compliance with the terms of the permit and any applicable orders associated with the Aguadilla RWWTP. Furthermore, EPA is ensuring that the issuance of this 301(h) modified permit is in full compliance with applicable laws and regulations.

3. Comment: "301(h) will not reduce pollution over the next 20 years."

3. EPA Response: The 301(h) modified permit for the Aguadilla RWWTP requires advanced primary treatment which removes more pollutants than required by the 301(h) primary treatment floor. The discharge, after rapid initial mixing to the extent allowed by the Puerto Rico Environmental Quality Board, will meet all applicable water quality standards.

EPA's approval of the Aguadilla RWWTP 301(h) application is based on its findings that the Aguadilla RWWTP meets all the criteria under Section 301(h) of the Act, as implemented by regulations contained in 40 CFR Part 125, Subpart G, and meets the requirement that a BIP of fish, shellfish and wildlife exists in the vicinity of the Aguadilla RWWTP outfall.

4. Comment: A number of commenters state: that primary wastewater treatment is not sufficient to protect human health and the sensitive Caribbean biota, and that the Puerto Rico Government continues to rely on primary wastewater treatment technology.

4. EPA Response: The U.S. Congress, in 1977, amended the CWA to add Section 301(h). Section 301(h) allows a WWTP to discharge primary treated effluent to the ocean if it can demonstrate to the satisfaction of EPA that it meets all nine 301(h) requirements as implemented by regulations contained in 40 CFR Part 125, Subpart G, including compliance with all applicable Commonwealth WQS and EPA marine criteria, which assure the protection and propagation of a BIP of fish, shellfish and wildlife, and human health. As for the portion of the comment related to the Puerto Rico Government's reliance on primary treatment, with the exception of the six RWWTPs that have been granted 301(h) waivers or which have a waiver application pending, PRASA is required to comply with the secondary treatment requirements at all of its WWTPs.

It is EPA's determination that PRASA has demonstrated that the Aguadilla RWWTP meets all of the requirements to obtain a 301(h) modified permit.

5. Comment: A number of commenters state that PRASA should stop spilling sewage through pipelines and should start building high efficiency, high quality treatment plants and secondary treatment plants.

5. EPA Response: It seems that the commenters are stating that EPA should require that PRASA stop discharging to the ocean and consider land based discharge alternatives as well as secondary or advanced wastewater treatment plants. EPA has no authority to require that an ocean discharge meeting the requirements of law and regulation, in this case 40 CFR Part 125 Subpart G, be eliminated in favor of land-based discharge alternatives, secondary treatment, or advanced wastewater treatment. In this instance, the Government of Puerto Rico seeks approval of a 301(h) waiver for the ocean discharge of advanced primary effluent and the Aguadilla RWWTP meets all of the requirements of Section 301(h).

6. Comment: A number of commenters state: "Because PRASA's 301(h) application was not timely filed, it cannot be considered by EPA. Because PRASA failed to submit a second round application within the time line established in section 301(j)(1) of the CWA, *33 U.S.C.A. §1311(j)(1)*, EPA does not have the authority to consider the current application. Pursuant to section 301(h) of the CWA, a POTW wishing to receive a waiver from secondary treatment could submit application in two discrete "rounds". PRASA submitted a first round application for a 301(h) waiver for the Aguada RWWTP in 1979. *2000 Decision Document, p.1.* It then submitted an application in 1985, which it called a revised application and EPA called an updated application. The document that EPA has designated as PRASA's second round application was not submitted until March of 1987. *Id.* Because no valid application was submitted prior to the December 29, 1982 deadline established in the Act, none were timely.

The CWA and its enacting regulations leave no doubt that the second round application had to be submitted before December 29, 1982. Pursuant to Section 301(j) of the CWA, *33 U.S.C.A. §1311(j)(1)*, applicants for waivers pursuant to section 301(h) "shall be filed no later than" December 3, 1982. EPA regulations state that an "application" pursuant to this section is defined as, among other things, (1) an application submitted between December 29, 1981 and December 29, 1982. 40 CFR §125.58(d). Furthermore, EPA regulations clearly establish a deadline of December 29, 1982 for the submission of 301(h) waiver applications for those plants, such as the Aguada RWWTP, that discharge into saline waters. *40 CFR §125.59(f)(1).*

An examination of the materials that explain this regulation leaves no doubt that compliance with this deadline was obligatory. On June 8, 1982, EPA published several amendments to the regulations implementing section 301(h) of the CWA to make them compatible with the new time frame established in section 301(j) of the CWA. *33 U.S.C.A. §1311(j)(1), 47 F.R. 24918 et seq*. In part, EPA stated that "[r]egardless of whether applications are filed before or after the proposed amendments become final, applicants must meet the December 29, 1982 statutory deadline". A few months later, EPA published further changes to the implementing regulations and made no changes to the sections establishing the new deadline. However, it underscored its importance when it stated "particular attention is directed to section 125.57(b) which sets forth the statutory deadline (December 29, 1982) by which applications must be filed. See also §125.59(e)(1)(e)." Therefore, it is clear from both the clear statutory language and from the implementing regulations that Congress established a deadline for the submission of waiver applications pursuant to section 301(h) and that the EPA intended this deadline to be obligatory to all applicants.

PRASA failed to comply with this deadline for the submission of the present 301(h) application. The EPA was not granted administrative discretion by the CWA to extend the application deadline. EPA, therefore, violated section 301(j) of the CWA, *33 U.S.C.A. §1311(j)(1),* by considering an untimely application."

6. EPA Response: In EPA's August 9, 1994 final 301(h) regulations, 40 CFR §125.59(f)(2)(i)(A)(B) states that "Applicants desiring to revise their applications under §125.59(d)(1) or (d)(2) [both refer to a one time revision after an EPA tentative decision in accordance §125.59(f)(2)(i)] must:

> **"(A) Submit to the appropriate Regional Administrator a letter of intent to revise their application either within 45 days of the date of EPA's tentative decision on their original application or within 45 days of November 26, 1982, *which ever is later*. Following receipt by EPA of a letter of intent, further EPA proceedings on the tentative decision under 40 CFR 124 will be stayed." (emphasis added)**
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> **"(B) Submit the revised application as described for new applications in §125.59(f)(1) either within one year of the date of EPA's tentative decision on their original application or within one year of November 26, 1982, if a tentative decision has already been made, *which ever is later*." (emphasis added)**

The regulation clearly states that the "letter of intent" to revise the application must be submitted within 45 days of EPA's tentative decision and the revised application must be submitted within one year of EPA's tentative decision or by November 26, 1982, *which ever is later*. EPA's tentative decision was made on March 19, 1986, which was later than November 26, 1982. Therefore, as per the above regulations, PRASA had until May 3, 1986 to submit a "letter of intent to revise" the Aguadilla RWWTP 301(h) application and until March 19, 1987, to submit a revised Aguadilla RWWTP 301(h) application to EPA. On April 28,1986, within 45 days of EPA's tentative denial, PRASA submitted a "letter of intent" to revise the Aguadilla RWWTP 301(h) application and on March 19, 1987, within one year of EPA's tentative decision, PRASA submitted the revised Aguadilla RWWTP 301(h) application. Both the "letter of intent" and the revised application were submitted to EPA in accordance with 40 CFR §125.59(f)(2)(i)(A). Therefore, PRASA has submitted a viable revised second round 301(h) application for the Aguadilla RWWTP.

7. Comment: The commenter states that: a) 301(h) applications "...can only be revised once, and this can only be done following a tentative decision on the original application. *40 CFR §125.59(d) (1), (f)(2)(i)(B)*."

b) That revisions can be submitted only if they propose changes to: (1) treatment levels and/or (2) outfall and diffuser location and design.*40 CFR §125.59(d) (1).*" Since EPA could not provide the commenters a copy of the original 1979 Aguada RWWTP first round 301(h) application, the commenters were unable to determine whether PRASA's 1987 Aguada RWWTP second round 301(h) application was submitted in accordance with EPA's 301(h) regulation or it is an illegally submitted 301(h) application.

c) EPA regulations clearly establish a limit on the amount of additional information that may be submitted by an applicant and that EPA has, in the case of the Aguada RWWTP, exceeded its statutory and regulatory authority and has illegally extended the Aguada RWWTP 301(h) application deadline indefinitely, until EPA believed it had sufficient data to approve the Aguada RWWTP second round 301(h) application. This violates the rule that revised applications must be submitted within one year of a tentative decision on the original application, and allows such applications to be submitted 11 to 18 years later. *40 CFR §125.59(f)(2)(i)(B)*;

d) EPA's current decision, that PRASA's Aguada RWWTP meets all 301(h) requirements, is based entirely on data submitted in PRASA's 1999 to 2000 Waiver Monitoring Reports. By allowing PRASA to submit four mixing zone studies (1985, 1987, 1993 & 1999) and the additional 1999/2000 monitoring data, EPA is relying on information submitted 11 to 18 years after the 1982 application deadline. This violates the rule that additional information must be submitted concurrently with a revised application and within one year after a tentative decision *40 CFR 125.59(f)(2)(ii) and (g)(1);*

e) A one-year extension may only be granted if applicants "demonstrate that they made a diligent effort to provide such information with their application and were unable to do so." 40 CFR 125.59(g)(2)(i). EPA provides no basis for concluding that PRASA met this requirement.

f) The original 1979 Aguada RWWTP first round 301(h) application is not part of the administrative record and that EPA should obtain and provide a copy of the 1979 application to all commenting parties and reopen the public comment period for the limited purpose of obtaining comments on the legality of EPA's acceptance of the 1985 revised 301(h) application.

7. EPA Response: a) EPA agrees that 40 CFR §125.59(d)(1) & (2) provide the applicant a one time opportunity to revise its 301(h) application after an EPA tentative decision. However, 40 CFR §125.59(d)(3) states that:

> **"Applicants authorized or requested to submit additional information under §125.59(g) may submit a revised application in accordance with §125.59(f)(2)(ii) where such additional information supports changes in proposed treatment levels and/or outfall and diffuser locations and design. The opportunity for such revisions shall be in addition to the onetime revision allowed under §125.59(d)(1) and (2)."**

A 301(h) applicant may submit one revised 301(h) application after an EPA tentative decision under 40 CFR §§125.59(d)(1) & (2). However, 40 CFR §125.59(d)(3), does not limit the number of revised applications an applicant may submit when requested by or authorized by EPA to provide certain additional information. Therefore, the regulations do not limit the applicant to the submission of just one revised 301(h) application.

b) EPA agrees that 40 CFR §125.59(d)(1) states that applicants that have submitted their applications:

> **"... in accordance with the June 15, 1979, regulations (44 FR 34784) may revise their applications one time following a tentative decision to propose changes to treatment levels and/or outfall and diffuser locations and design in accordance with §125.59(f)(2)(i)."**

As stated more fully below, despite a diligent search of its archived files, EPA could not find the archived first round 1979 Aguadilla RWWTP 301(h) application. However, the following is a comparison of the proposed discharge limits and treatment process proposed by PRASA in its original 1979 first round 301(h) application as reported in Tetra Tech (1982) and those treatment levels proposed by PRASA in its revised 1987 second round 301(h) application (PRASA, 1987):

Treatment Limits	1979 Application	1987 Application
BOD mg/L	147	180
SS mg/L	91	71
pH	-	6.0-9.0

Treatment Process:

1979 - Primary - grit removal, clarification and effluent chlorination

1987 - Primary - Screening, grit removal, primary sedimentation and effluent chlorination.

Although the BOD treatment limit of 180 mg/L proposed by PRASA in its 1987 Aguadilla

RWWTP second round 301(h) application (PRASA, 1987) represent an increase compared to the 147 mg/L proposed in PRASA's original 1979 application (Tetra Tech, 1982), the 301(h) regulations do not prohibit the applicant from proposing increased loads. 40 CFR §125.59(d)(1) only requires that the second round application "propose changes to treatment levels and/or outfall and diffuser locations and design in accordance with §125.59(f)(2)(i)" and §125.59(f)(2)(i) only addresses the time frame for submittal of a revised application. Therefore, it is EPA's determination that PRASA's 1987 second round 301(h) application was submitted in accordance with 40 CFR §125.59(d)(1).

c & d) EPA disagrees with the commenters' interpretation that there is a finite amount of information an applicant can submit in pursuit of a 301(h) waiver. The 301(h) regulations allow the applicant to request an opportunity to submit additional data and EPA to authorize or request an applicant to submit additional data. 40 CFR §§125.59(g)(1)&(2) clearly state:

> **40 CFR §125.59(g)(1) "The Administrator may authorize or request an applicant to submit additional information by a specified date not to exceed one year from the date of authorization or request."**
>
> **40 CFR §125.59(g)(2) "Applicants seeking authorization to submit additional information on current/modified discharge characteristics, water quality, biological conditions or oceanographic characteristics must:**
>
> > **(i) Demonstrate that they made a diligent effort to provide such information with their application and were unable to do so, and**
> > **(ii) Submit a plan of study, including a schedule, for the data collection and submittal of the additional information."**

Therefore, the 301(h) regulations allow EPA to use data submitted after the application to make 301(h) decisions. EPA believes it would be inappropriate not to use all available data when making a 301(h) decision. EPA used all available, relevant data, including, among other things, data presented by PRASA in its 1987 second round 301(h) application, data contained in Discharge Monitoring Reports (DMRs) for this facility, responses to information requests made by EPA, including data submitted by PRASA in its ten Quarterly Monitoring Reports in accordance with Clean Water Act Section 308 enforcement information letters requesting such information from PRASA.

e) 40 CFR §125.59(g)(1) provides EPA the discretion to authorize or request an applicant to submit additional information and to allow up to one year for the applicant to submit the information. PRASA submitted the Aguadilla RWWTP second round 301(h) application, to EPA, on March 19, 1987. PRASA did not submit nor did EPA request additional information prior to the second round application being tentatively approved. EPA tentatively approved PRASA's application on September 30, 1988. Thereafter, EPA did use the discretion provided under 40 CFR §125.59(g)(1) and other provisions of the CWA to authorize PRASA to gather additional information regarding this discharge and

the ambient conditions in the vicinity of the outfall. As indicated above, EPA utilized all relevant, available data in making its decision. Some data was submitted in response to specific requests from EPA, such as the Quarterly Monitoring Reports, and some data was submitted in accordance with permit requirements, such as the DMRs or the permit renewal application.

f) EPA tried diligently to provide the commenters with a copy of PRASA's original 1979 Aguadilla RWWTP first round 301(h) application. EPA checked its files, checked its archives, and did a box by box search of all archived documents related to 301(h) applications, but was unable to find a copy of PRASA's original 1979 Aguadilla RWWTP first round 301(h) application. EPA believes that the archived 1979 Aguadilla RWWTP 301(h) application was mistakenly destroyed with other archived files. EPA also requested a copy of the original 1979 Aguadilla RWWTP first round 301(h) application from PRASA, PREQB, EPA-HQ, and EPA's past 301(h) contractor, Tetra Tech, Inc. None had a copy of the 1979 Aguadilla application.

As stated above, it is EPA's determination that, PRASA's 1987 second round Aguadilla RWWTP 301(h) application was submitted in accordance with the 301(h) regulation as implemented in 40 CFR §125.59(d)(1), that EPA provided the above commenters all the information still available to EPA that was relied on in making this decision and that EPA provided them with sufficient time to review the information and comment on EPA's decision to approve the Aguadilla RWWTP 301(h) application. Therefore, EPA will not reopen the public comment period for the limited purpose of obtaining comments on the legality of EPA's acceptance of the 1987 Aguadilla RWWTP application.

8. Comment: a) Given the ecological sensitivity of reef ecosystems, and b) the uncertainty involved in protecting Puerto Ricans from sewage-derived pathogens, a proper solution will almost certainly require new and bold thinking, and the commitment of significant national funding. Building effective partnerships with local governments and local people requires an investment. c) Deny the waivers, but help also solve the problems.

8. EPA Response: Since this comment was submitted in response to EPA's decision to approve the Aguadilla RWWTP 301(h) waiver from secondary treatment, EPA will focus its response on the above comments only as they apply to its 301(h) decision for the Aguadilla RWWTP.

a) EPA acknowledges the importance of the tropical reef ecosystems. However, the coral reef survey of Puerto Rico conducted by Goenaga and Cintron (1979), prior to the start-up of the Aguadilla RWWTP, describes coral reef development in the vicinity of the Aguadilla RWWTP as follows: "Poorly developed fringing reefs, consisting primarily of partially dead <u>Acropora</u> <u>palmata</u> (elkhorn coral) and sparse gorgonian, occur on the north side of the Rincon Peninsula from Punta Higuero to Punta Boqueron... North of this point only scattered, undeveloped, coral growth occurs."

There are no "well-developed coral reef communities" located within the vicinity of the Aguadilla RWWTP. However, given the natural conditions of the area, the data provided by the applicant indicates that the sparse but healthy and diverse coral communities exist within 1.8 km of the discharge. The Region 2 301(h) Review Team concludes that PRASA has demonstrated that the Aguadilla discharge will not adversely impact these coral communities or any other coral communities that may be located in the vicinity of the Aguadilla RWWTP outfall.

b) DMR data and data submitted by PRASA in its ten 301(h) Waiver Quarterly Monitoring Reports (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c) indicate that since the January 2000 upgrade, the Aguadilla RWWTP has continuously met its total and fecal coliform effluent limits (except for one total coliform exceedence in February 2001). Therefore, EPA has determined that pathogens from the Aguadilla RWWTP do not pose a risk to human health.

c) EPA must enforce all sections of the CWA, including Section 301(h). By enforcing the CWA, EPA is fulfilling its mandate to protect, maintain and improve water quality in all waters of the United States, including those of Puerto Rico. As explained in detail in EPA's Aguadilla Decision Document entitled "Analysis of the Section 301(h) Secondary Treatment Waiver Application for the Aguadilla Regional Wastewater Treatment Plant", the Aguadilla RWWTP is being operated at an advanced primary level, which PRASA has demonstrated is sufficient to meet all nine criteria in Section 301(h), as implemented by regulations contained in 40 CFR Part 125, Subpart G, including compliance with all applicable NPDES permit limits and all WQS applicable to Class SC waters, assuring the protection and propagation of a BIP of fish, shellfish and wildlife, in the vicinity of the Aguadilla RWWTP ocean outfall.

EPA has been working, and will continue to work, with PREQB, under the NPDES, Total Maximum Daily Load (TMDL), water quality standards, nonpoint source, watershed management, National Estuary Program (NEP), Safe Drinking Water Act and other programs to protect and improve the quality of the waters in and around Puerto Rico.

9. Comment: a) In 1990 there was an internal audit at the EPA, Region 2, in which it was shown that the EPA, Region 2, has been completely negligent in denying 301 (h) requests in Puerto Rico and the Virgin Islands; that the EPA failed to enforce compliance with the CWA, and it failed to require, by law, the protection of public health. It concludes that there is a consistent pattern of holding endless negotiations without ever reaching solutions to the problems in Puerto Rico. In other words, the whole time they should have denied the permits, denied the waivers, and enforced compliance.

b) The plants have complied with regulations maybe over the last year. But by now, if they have not been able to enforce compliance for the last 14 years, enough at least to grant the waiver before now, if they grant the waiver now, what leverage does the EPA have to demand that PRASA keep the plant in compliance. Now they give them the waiver, and the EPA does not

have any more leverage. The plant can fall out of compliance over the next six months while the permit would be valid for the next five years.

c) Meanwhile, the EPA can issue Administrative Orders, although PRASA is not being fined as it is. We want to know why the EPA has not levied one single cent in fines on the Aqueduct Authority over the last 18 months.

9. EPA Response: Since this comment was submitted in response to EPA's decision to approve the Aguadilla RWWTP 301(h) waiver from secondary treatment, EPA will focus its response on the above comments only as they apply to its 301(h) decision for the Aguadilla RWWTP.

a) EPA believes that the 1990 Audit Report referenced by the non-governmental organizations (NGOs) is the September 18, 1990 final audit report of the Office of the Inspector General (OIG) entitled "*Review of EPA's Processing of CWA Section 301(h) Waivers."* The OIG audited the Region's decision making process and time history of decision making. The OIG did not review data, assess EPA's technical basis for decisions or comment on the technical validity of EPA's decisions. The OIG criticized the Region for the "...lengthy review process...", "...endless negotiation without achieving any major progress to a formal determination..."; and "...lack of consideration of the facility's compliance with Administrative Orders, interim effluent limits, and conditions of the tentative approvals." Based on these three criticisms of the Region's 301(h) program, the OIG made the following statement:

> **"...eight of the facilities continue to discharge less than secondary treated effluent into the ocean creating the potential for human health problems and impacting marine life."**

The above statement was not based on the available data but rather on the OIG's assumption that EPA's delay in issuing final decisions, that PRASA's problems meeting the primary floor and achieving continuing compliance at the 301(h) facilities and that any level of treatment less than secondary treatment may have an impact on human health and marine life. No new or additional data were generated by the OIG's final report. EPA Region 2's draft final 301(h) decision for the Aguadilla RWWTP was based on the review of applicable data, which included data from the early 1980's through 2000. This data included all the data available at the time of the OIG review plus additional data gathered since that report. The Audit Report does not provide data that support the NGOs' position, nor does it provide EPA any additional data pertinent to the establishment of a technically valid 301(h) decision for the Aguadilla RWWTP.

In the end, the OIG did not recommend that EPA disapprove the waivers. In fact, the OIG's final three recommendations to the Region were to develop and implement:

> **"1. Guidelines setting time frames or schedules for review and determination of**

pending applications and data submissions.

2. Procedures to effectively monitor applicants' compliance with Ordered interim effluent limits, Tentative Approval conditions, and Modified Permit requirements.

3. Procedures to ensure timely conversions of tentative approvals to final approvals and preparation of modified permits when the secondary equivalency issue is resolved."

b) EPA acknowledges that the Aguadilla RWWTP has not been in consistent compliance with its permit effluent limitations since it began operations. However, since the Government of Puerto Rico hired a contractor to manage PRASA and its facilities, the Aguadilla RWWTP has dramatically improved its performance. Since January 2000, PRASA has consistently complied with its effluent limitations as well as all 301(h) requirements including the primary treatment floor requirements. There is evidence that a turn-around has occurred at this facility with respect to its compliance status.

A 301(h) waiver from the requirements of secondary treatment is granted for the 5 year life of the permit. The post waiver monitoring program included in the 301(h) modified permit is designed to provide EPA with the information it needs to determine PRASA's continued compliance with all of the 301(h) requirements. If at the time of the next Aguadilla RWWTP permit renewal, PRASA requests a renewal of the Aguadilla RWWTP 301(h) waiver and has demonstrated continued compliance with all of the 301(h) requirements, EPA would reissue a 301(h) modified permit and allow the Aguadilla RWWTP to continue operating at an advanced primary level of treatment. If, however, the post waiver monitoring program or any other data indicates that the Aguadilla RWWTP can no longer meet all of the 301(h) requirements, or EPA determines that PRASA cannot demonstrate continued compliance with all the 301(h) requirements, EPA may revoke the Aguadilla RWWTP 301(h) waiver and require PRASA to construct a secondary treatment facility.

c) Over the years, EPA has issued Administrative Orders to PRASA for noncompliance with its Aguadilla RWWTP NPDES permit limits and conditions. Along with the Administrative Orders, penalties have been assessed by EPA when the plant failed to comply within a certain time frame. Currently, through EPA enforcement and PRASA's efforts to address and correct operational problems, the Aguadilla RWWTP has achieved and has demonstrated its ability to remain in continuing compliance with its NPDES permit limits as well as all 301(h) requirements. Therefore, no penalties have been assessed from PRASA during the past 18 months. There is evidence that a turn-around has occurred at this facility with respect to its compliance status. EPA will remain vigilant to ensure that full, continuing compliance is achieved.

10. Comment: The commenter states that: a) nobody believes the conclusion reached by

PRASA and EPA, that 14 years of nearly raw sewage has not affected our beaches, b) and asks that EPA's staff, "as Puerto Ricans, deal yourselves in, that you work here in Puerto Rico, and not just for a federal agency, but also for the Puerto Rican people. We will continue with this fight for the health of all the communities and their future."

10. EPA Response: a) EPA does not agree that the advanced primary effluent discharged by the Aguadilla RWWTP has impacted the Aguadilla beaches. EPA's approval of a 301(h) application is based on its determination that the Aguadilla RWWTP meets all the criteria under Section 301(h) of the Act, as implemented by regulations contained in 40 CFR Part 125, Subpart G, and meets the requirement that a BIP of fish shellfish and wildlife exists in the vicinity of the Aguadilla RWWTP outfall. EPA has determined that the Aguadilla RWWTP will not impact, or pose a risk to human health and allows recreational activities in and on the water of the Aguadilla coast.

b) EPA is meeting its responsibilities to enforce the CWA by reviewing and issuing 301(h) waivers for facilities that meet the 301(h) requirements as outlined in the CWA and 40 CFR Part 125, Subpart G. By enforcing the requirements of the CWA, EPA is protecting the environment and human health.

11. Comment: The commenter states that PRASA has not met the 301(h) requirements and has continued to violate the provisions of its permit and has been continuously in violation of the permits. For this reason the commenter is opposed to the 301(h) discharge, any increase in the 301(h) discharge and to the granting of a 301(h) waiver for the Aguadilla RWWTP.

11. EPA Response: EPA acknowledges that the Aguadilla RWWTP has not been in consistent compliance with its permit effluent limitations since it began operations. However, since the Government of Puerto Rico hired a contractor to manage PRASA and its facilities, the Aguadilla RWWTP has dramatically improved its performance. Since January 2000 PRASA has consistently complied with its effluent limitations as well as all 301(h) requirements including the primary treatment floor requirements (except for total coliform in February 2001). There is evidence that a turn-around has occurred at this facility with respect to its compliance status.

EPA's approval of the Aguadilla RWWTP 301(h) modification to the requirements of secondary treatment is based on the applicant's demonstration that the advanced primary treatment, proposed increased flow and other modifications proposed for the Aguadilla RWWTP meet all nine 301(h) requirements as implemented by regulations contained in 40 CFR Part 125, Subpart G, including compliance with all applicable Commonwealth WQS and EPA marine criteria, which assure the protection and propagation of a BIP of fish, shellfish and wildlife, and the protection of human health in the receiving waters of the Aguadilla RWWTP ocean outfall.

12. Comment: Some commenters state that: a) the government of Puerto Rico signed an agreement with the Director of Region 2 of EPA on the matter of water treatment in Puerto

Rico. This agreement shows that neither the current government of Puerto Rico nor the federal government care about the health of our people. The agreement provides that numerous primary water treatment plants will not have to be converted into secondary treatment facilities until 2020. This is the case despite the fact that there is a federal CWA that dates back to 1972. This Act affirms that primary water treatment is not effective in protecting public health and the environment, and that tertiary treatment is needed. The justification given for that vile agreement is that the government does not have the millions of dollars needed for such secondary treatment and that treatment is unnecessary. This last point contradicts the CWA with which the EPA supposedly has to comply. The questions that we have are the following: How many millions of dollars is the health of our people worth; and how many millions of dollars does it cost to keep our coastal ecosystems healthy? Scientific studies have shown that the tropical coastal ecosystems are very delicate and sensitive, and that 75 percent of our coral reefs are dead or under the threat of being so. For these reasons, not even secondary treatment of sewage would be enough to protect them, and for that reason, tertiary treatment or zero discharge technology is needed. Who is really benefitting from this government policy? The Water Company, because it can continue providing us with dirty and polluted water for the next two decades while the fight of the communities for clean water continues and while water continues to be on short demand in our neighborhoods.

b) For us, those from Aguada, Puerto Ricans, the matter of the environment and, in this case, the waters, are of great importance. A healthy nation with growth prospects demands clean water so as to have a healthy population. Such a nation must have clean oceans that allow for fish to multiply, fish that feed us, and it must have clean, unpolluted beaches for the enjoyment of our swimmers and for the development of our tourism industry.

c) The commenters call upon all sectors of society to join forces so that, through the lawmakers, the mayors, and the agency directors, by 2005 at the latest, all the waste water in Aguada and in all of Puerto Rico may have, at the least, secondary treatment and then, by 2010, tertiary treatment. I call upon the citizenry in general to demand of our governors the creation of a government policy for the recycling of waste water so that, instead of dumping it into the ocean, after proper biological and chemical treatment, the waters may be reincorporated into our hydrographic network for ulterior use.

d) The commenters call upon: the people of Puerto Rico to, in a conscientious and responsible manner, not act as accomplices to this "dastardly public policy that has such effects on the health of our people while exclusively benefitting the interests of the powerful" and upon EPA officials to "desist in playing with the pollution data from our bodies of water"and that EPA officials should tell them "why they have to come and pollute the waters in the western regions of the country, which are the cleanest, and through which the colonizers first arrived."

12. EPA Response: Since this comment was submitted in response to EPA's decision to approve the Aguadilla RWWTP 301(h) waiver from secondary treatment, EPA will focus its response on the above comments only as they apply to its 301(h) decision for the Aguadilla RWWTP.

a) On August 10, 2000, EPA and the Government of Puerto Rico signed the "Memorandum of Agreement to Voluntarily Achieve Secondary Treatment between the Government of Puerto Rico and the U.S. EPA, Region 2". Under the MOA, both EPA and the Government of Puerto Rico agree that any action taken will ensure protection of public health and the environment and assure full compliance with all federal and Commonwealth laws and regulations.

The MOA commits EPA and the Government of Puerto Rico to voluntarily upgrade to secondary treatment "...even if continuing discharges at less than full secondary treatment are shown to fully protect public health and the environment, including essential fish habitat, the Parties still intend to work cooperatively to upgrade these discharges, over time, to full secondary treatment, as Federal capital funds are made available."

As agreed to in the MOA, should EPA issue a final denial of any of the remaining 301(h) applications: "EPA will reissue secondary treatment permits, with companion orders, for those facilities that do not fully meet the stringent statutory and regulatory requirements for modified §301(h) permits. The companion orders will secure expeditious schedules of compliance with the terms of those permits, will define interim requirements and will secure other appropriate relief."

With respect to the commenters' concerns regarding protection of human health and a healthy coastal ecosystem, EPA's approval of a 301(h) application is based on our findings that the Aguadilla RWWTP meets all the criteria under Section 301(h) of the Act, as implemented by regulations contained in 40 CFR Part 125, Subpart G, and, therefore is protective of human health and meets the requirement that a BIP of fish, shellfish and wildlife exists in the vicinity of the Aguadilla RWWTP outfall. The voluntary achievement of secondary treatment, at the Aguadilla RWWTP would only further improve water quality. In the interim, PRASA will be required by the 301(h) modified permit to continue Post Waiver Monitoring, and EPA will continue to assess the Aguadilla RWWTP's compliance with Section 301(h) requirements.

EPA is meeting its responsibilities to enforce the CWA by reviewing and issuing 301(h) waivers for facilities that meet the 301(h) requirements as outlined in the CWA and 40 CFR Part 125, Subpart G. By meeting the requirements of the CWA, EPA is protecting the environment and human health for poor, as well as other, communities.

At the discretion of the Government of Puerto Rico, the MOA goes beyond the minimum requirements of the CWA. It does not contradict EPA's and the CWA's primary objective which is stated in Section 101(a) of the Act as follows: "The objective of this Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." By signing the MOA, former Regional Administrator, Jeanne Fox, did not in any way act contrary to her responsibilities under the CWA.

While EPA agrees that constructing secondary treatment facilities at all of the 301(h)

facilities including the Aguadilla RWWTP would be a major capital expenditure and that there is some support for the position that the financial resources needed to construct secondary treatment facilities at these RWWTPs may be more effectively used to manage other water quality needs, such a cost benefit analysis is not a part of the 301(h) decision process.

EPA's approval of the Aguadilla RWWTP 301(h) waiver from the requirements of secondary treatment is based on the applicant's demonstration that the Aguadilla RWWTP meets all 301(h) requirements, including compliance with all applicable WQS necessary to assure protection and propagation of a BIP of fish, shellfish and wildlife, in the vicinity of the ocean outfall, as required by regulations contained in 40 CFR Part 125, Subpart G.

b) EPA concurs with this comment and believes that the decision to approve the Aguadilla RWWTP 301(h) waiver application is consistent with the goals expressed.

c) The CWA does not require tertiary treatment for WWTPs, and EPA has no authority to require that an ocean discharge meeting all the requirements of Section 301(h) of the CWA, and regulation, 40 CFR Part 125, be eliminated in favor of secondary or tertiary treatment. At this time, the Government of Puerto Rico seeks approval of a 301(h) waiver for the Aguadilla RWWTP ocean discharge of advanced primary effluent, and since the discharge meets all nine criteria of Section 301(h), EPA is approving this waiver.

d) By enforcing all sections of the CWA, including Section 301(h), EPA is fulfilling its mandate to protect, maintain and improve water quality in all waters of the United States, including those of Puerto Rico.

B. Operation and Maintenance of the Aguadilla RWWTP

13. Comment: EPA should make and hold PRASA responsible for the proper operation and maintenance of its WWTPs.

13. EPA Response: EPA concurs with the comment. It is EPA's responsibility to assure that PRASA properly operates and maintains its WWTPs including the Aguadilla RWWTP. EPA acknowledges that, in the past, the Aguadilla RWWTP has not always been in continuous compliance with its NPDES permit limits and with the 301(h) primary treatment floor. EPA focused its efforts on ensuring PRASA's compliance with permit requirements and with CWA 301(h) requirements, through enforcement and compliance assistance.

Over the years, EPA has issued Administrative Orders to PRASA for its noncompliance with its Aguadilla NPDES permit limits and conditions. Currently, through EPA enforcement and PRASA's efforts to address and correct operational problems, the Aguadilla RWWTP has achieved consistent compliance with its NPDES permit limits, and

with the Section 301(h) primary treatment floor.

14. Comment: One commenter states that: "The Aguadilla plant has a poor history of compliance to minimal wastewater removal standards."

14. EPA Response: EPA acknowledges that the Aguadilla RWWTP has not been in consistent compliance with effluent limitations since it began operations. Specifically, the non-compliance was caused by the lack of proper Operation and Maintenance at the facility, the malfunction of equipment or equipment being used past useful life, and the lack of adequate staff training and supervision at the facility. EPA has taken necessary actions over the years to address non-compliance and to ensure consistent compliance with permit requirements. Since the Government of Puerto Rico hired a contractor to manage PRASA and its facilities, the Aguadilla RWWTP has dramatically improved its performance. Since January 2000 PRASA has consistently complied with its effluent limitations as well as all 301(h) requirements including the primary treatment floor requirements. There is evidence that a turn-around has occurred at this facility with respect to its compliance status.

15. Comment: If approved, wastewater outflows from the Aguadilla RWWTP would be doubled with no improvements to the plant and many human and marine habitats will be destroyed."

15. EPA Response: EPA's approval of the Aguadilla RWWTP 301(h) modification to the requirements of secondary treatment is based on the applicant's demonstration that advanced primary treatment, based on a monthly average flow of 8 MGD and a daily maximum flow of 16 MGD and other modifications proposed for the Aguadilla RWWTP meet all nine 301(h) requirements as implemented by regulations contained in 40 CFR Part 125, Subpart G, including compliance with all applicable Commonwealth WQS and EPA marine criteria, which assure the protection and propagation of a BIP of fish, shellfish and wildlife, and the protection of human health in the receiving waters of the Aguadilla RWWTP ocean outfall.

16. Comment: EPA arbitrarily and capriciously concluded that PRASA can comply with the primary treatment BOD removal efficiencies. One of the most important components of the 301(h) waiver program is the plant's ability to remove a minimum of 30% of the BOD. This removal efficiency is measured "based on the monthly average results of the monitoring." "PRASA's DMR data demonstrates that it failed to meet this standard in November 1999 (23%), April 1995 (27%), November 1994 (28%) and October 1994 (21%). The most recent violations came after PRASA began using polymer addition in order to enhance BOD removal. Therefore, PRASA has failed to demonstrate that it will be able to consistently comply with this important regulatory requirement and this application must be denied.

16. EPA Response: EPA acknowledges that the Aguadilla RWWTP has not been in consistent compliance with effluent limitations since it began operations. EPA concurs

with the commenter's statement that the November 1999 contravention of the monthly average TSS limit occurred after the June 1999 initiation of chemical addition to enhance solids sedimentation. EPA's review of the DMRs, submitted by PRASA, indicates that, since January 2000, the Aguadilla RWWTP has continuously met its NPDES permit limits and the 301(h) primary floor requirement of 30% removal of BOD_5. During the same period of time, with the exception of June 2002, the Aguadilla RWWTP has met the 301(h) monthly average TSS limit of 50%. The Aguadilla RWWTP monthly average TSS removal for June 2002 was 46%. For two weeks during June 2002 PRASA did not add polymer to its effluent. As soon as EPA became aware of the situation, PRASA was immediately required to resume polymer addition. Since then continued compliance with TSS has been achieved.

EPA considers this data as evidence that a turn-around has occurred at the Aguadilla RWWTP with respect to its compliance status. EPA will remain vigilant to ensure that full, continuing compliance is achieved (see response 14).

17. Comment: PRASA failed to provide data on freshwater infiltration into the RWWTP. PRASA erroneously reported that there would be no combined sewer overflows from the RWWTP. *1987 Application, p. JI-A6. 1.* However, the freshwater infiltration problems in the plant are so serious that they led EPA to issue an Administrative Order. *CWA-02-99-3100, Exh. 15.* Indeed, PRASA notes that, in one incident, flow at the plant increased from 5.6 to 17.5 MGD in a 3 hour period due to infiltration problems. *First Quarterly Sampling, Vol. II, Field Notebook, October 99, Field Notes of Laura* Gonzalez. This infiltration problem can have serious consequences to the quality and quantity of the plant's discharge. PRASA itself has documented at least one instance in which the plant received an influent that exceeded its design capacity of 16 MGD. At these levels, the plant is unable to provide the treatment level for which it was designed, leading to potential violations to its NPDES permit. Indeed, this infiltration problem may be the main cause or a significant contributor to the pump station malfunctions that have been previously noted. The pump system may not be designed to adequately convey the large volumes of rainwater that enter into the plant's collection system during heavy rains. This problem should not be considered an isolated incident in an area where tropical downpours can be a daily occurrence. PRASA must provide information regarding the nature and extent of the freshwater infiltration problem. It must also characterize water quality during these events. Its failure to do so makes this application unapprovable.

17. EPA Response: EPA is aware that during heavy rain events the facility receives a larger volume of infiltration, and that flows at the plant increase, sometimes dramatically. EPA has issued Administrative Order CWA-02-2003-3048 to require an infiltration/inflow (I/I) study for the Aguadilla RWWTP sanitary sewer system by July 2003, and implementation of the necessary repairs by December 2003. Once the study is completed and the necessary repairs are made, I/I problems should be minimized.

With respect to combined sewer overflows (CSOs), PRASA is correct when it states that the Aguadilla RWWTP system does not contain CSOs. I/I and CSOs are two different

issues. I/I refers to infiltration and inflow to separate sanitary sewers. While CSO, are overflows of combined sanitary waste and storm water from systems introduced to convey both. The Aguadilla system has no combined sewers.

18. Comment: a) For decades the United States has treated both the Virgin Islands and Puerto Rico as poor relations in terms of public investment in water and sewer infrastructure. The failure to achieve even barely adequate standards in sewage treatment, the inability to eliminate bypasses and spills from sewage collection systems, and the pending secondary waiver applications from both governments, has resulted directly from this neglect. b) Correcting this neglect will require a complete analysis of human waste management options, including non-discharge opportunities and tertiary treatment. c) Issuing the proposed waiver would unacceptably institutionalize the chronic mistreatment of Puerto Rico and its natural resources.

18. EPA Response: Since this comment was submitted in response to EPA's decision to approve the Aguadilla RWWTP 301(h) waiver from secondary treatment, EPA will focus its response on the above comments only as they apply to its 301(h) decision for the Aguadilla RWWTP.

a) EPA acknowledges that the Aguadilla RWWTP has not been in consistent compliance with effluent limitations since it began operations. Over the years, EPA has issued Administrative Orders to PRASA for its noncompliance with its Aguadilla RWWTP NPDES permit limits and conditions (see response 14).

Currently, through EPA enforcement and PRASA's efforts to address and correct operational problems, the Aguadilla RWWTP has achieved and has demonstrated its ability to remain in continuing compliance with its NPDES permit limits as well as all 301(h) requirements.

EPA's review of DMRs indicates that, since January 2000, the Aguadilla RWWTP has continuously met its NPDES permit limit and the 301(h) primary floor requirement of 30% removal of BOD_5. During the same period of time, with the exception of June 2002, the Aguadilla RWWTP has met the 301(h) monthly average TSS limit of 50%. EPA considers this data as evidence that a turn-around has occurred at the Aguadilla RWWTP with respect to its compliance status. EPA will remain vigilant to ensure that full, continuing compliance is achieved.

b) EPA has no authority to require that an ocean discharge meeting all the requirements of Section 301(h) of the CWA and its regulations, 40 CFR Part 125, be eliminated in favor of "waste management options, including non-discharge opportunities and tertiary treatment." The Government of Puerto Rico seeks approval of a 301(h) waiver for the ocean discharge of advanced primary effluent, and since the discharge meets all nine criteria of Section 301(h), EPA is approving the waiver.

c) As explained in detail in EPA's Aguadilla Decision Document entitled "Analysis of the

Section 301(h) Secondary Treatment Waiver Application for the Aguadilla Regional Wastewater Treatment Plant", the Aguadilla RWWTP is being operated at an advanced primary level, which PRASA has demonstrated is sufficient to meet all nine criteria in Section 301(h), as implemented by regulations contained in 40 CFR Part 125, Subpart G, including compliance with all applicable NPDES permit limits and all WQS applicable to Class SC waters, assuring the protection and propagation of a BIP of fish, shellfish and wildlife, in the vicinity of the Aguadilla RWWTP ocean outfall.

19. Comment: a) The absence of appropriate indicators of overall human pathogenicity for sewage in tropical environments argues for exceptional care in dumping sewage into marine or estuarine waters in the region. This is especially true given the important and traditional linkages to the water for both recreational and economic uses, and the incipient upswing in tourist development in Western Puerto Rico. b) Both the direct livelihood and the economic future of many Puerto Ricans are directly dependent on high quality marine environments.

19. EPA Response: a) EPA understands that total and fecal coliform may not be the best indicators of pathogens in tropical or temperate waters. The Commonwealth of Puerto Rico has adopted entrococci, which is EPA's suggested pathogen criteria for its Class SB primary contact waters but maintains the total and fecal coliform criteria for Class SC waters, secondary contact waters. Since the Aguadilla RWWTP discharges into Class SC waters, its permit contains total and fecal coliform limits. However, although not required, PRASA in its ten Quarterly Reports (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c) analyzed a total of 212 ambient water samples for enterococci.

Out of 212 ambient samples analyzed for entrococci, in Class SC waters, only 11 or 5.2% (two at A1 (MZ) station, two at A2 (MZ) station, three at A3 (Farfield) station, one at A5 (Background) station, and three at A6 (ZID) station) were reported above the ambient water quality criteria for Class SB waters.

EPA is working with EQB through the ongoing WQS triennial review process to determine the need for new/revised pathogen criteria for the remaining Class SC waters in Puerto Rico and to encourage EQB to adopt such criteria where necessary.

b) EPA's review of data contained in the Aguadilla RWWTP 301(h) waiver application and in PRASA's ten 301(h) Waiver Quarterly Monitoring Reports (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c), indicate that the primary discharge of the Aguadilla RWWTP has not had an adverse impact on the water quality or biota in the vicinity of the discharge. EPA has determined that the Aguadilla RWWTP discharge complies with all applicable requirements of the Commonwealth WQS and that no restrictions on recreational activities have been imposed specific to the Aguadilla RWWTP, which limits recreational activities beyond those identified for Class SC waters. Therefore, EPA has determined that the Aguadilla RWWTP meets the requirements of 40 CFR §125.62(d)(2).

EPA's approval of the Aguadilla RWWTP 301(h) modification from the requirements of

secondary treatment is based on the applicant's demonstration that this RWWTP meets all nine 301(h) requirements as implemented by regulations contained in 40 CFR Part 125, Subpart G, including compliance with all applicable WQS which assure the protection and propagation of a BIP of fish, shellfish and wildlife, in the vicinity of the ocean outfall. As described in EPA's Decision Document (EPA, 2000b), PRASA has documented compliance with CWA Section 301(h) requirements. EPA, therefore, concludes that the Aguadilla RWWTP discharge of less than secondary effluent does not pose a risk to human health or marine life.

20. Comment: PRASA, CAPR and AFI have an aggressive investment program according to the needs of the communities and Puerto Rico. Through this improvement and investment program, they have spent a hundred and forty million dollars Island-wide in repairs and improvements in the last three years. At the Aguadilla RWWTP they have invested over one point eight million in repairs, so the facility can meet and sustain compliance with regulatory requirements. Improvements at the Aguadilla RWWTP include the construction of a sewage receptor tank for septic trucks and two new sludge belt filter presses. The operation and efficiency of the plants have improved dramatically, and the Aguada/Aguadilla plant and the underwater effluent pipe have proven to be of an efficient design and operation that comply with local and federal quality standards.

20. EPA Response: EPA acknowledges that PRASA has upgraded operation, maintenance and monitoring at the Aguadilla RWWTP and its tributary pump stations (see response 14). PRASA's investments on the rest of the Island are not relevant to the Aguadilla 301(h) decision.

21. Comment: Improvements to secondary treatment would be extremely expensive at approximately $1.4 billion for all the plants to be converted into secondary treatment facilities, with more than $50 million going to the Aguada/Aguadilla plant alone. That investment would not offer quantifiable environmental improvements. The money that would be needed for the improvements would be better invested in infrastructure and potable water and sewage systems. Such an investment would benefit both the users and the environment. The 301(h) waivers are appropriate and necessary, and the memorandum of understanding between the EPA and the government of Puerto Rico speaks to future improvements to secondary waste-water treatment. For the reasons mentioned above, we are in favor of the granting of the NPDES permit to the PRASA with the 301(h) waiver.

21. EPA Response: While EPA agrees that constructing secondary treatment facilities at all of the 301(h) facilities including the Aguadilla RWWTP would be a major capital expenditure and that there is some support for the position that the financial resources needed to construct secondary treatment facilities at these RWWTPs may be more effectively used to manage other water quality needs, such a cost benefit analysis is not a part of the 301(h) decision process.

EPA's approval of the Aguadilla RWWTP 301(h) waiver from the requirements of

secondary treatment is based on the applicant's demonstration that the Aguadilla RWWTP meets all 301(h) requirements, including compliance with all applicable WQS necessary to assure protection and propagation of a BIP of fish, shellfish and wildlife, in the vicinity of the ocean outfall, as required by regulations contained in 40 C/FR Part 125, Subpart G.

22. Comment: PRASA is using advanced primary treatment, at the Aguadilla RWWTP, in order to ensure improvement in the plant's performance and NPDES permit compliance.

22. EPA Response: EPA concurs that PRASA's use of advanced primary treatment at the Aguadilla RWWTP has assisted PRASA in obtaining the BOD and TSS removals necessary to meet the primary floor requirement of Section 301(h).

23. Comment: The new contract for operation and administration with the Puerto Rican Water Company was signed on March 1, 1999. Said contract allows for improved management of the system's resources and provides oversight for the operational maintenance programs, programs for reinvestment, renovation and replacement, special projects, and also budget allocations to capital improvements. It also increases the effectiveness of the regions, areas, and plant managers. Financing includes $144 million in maintenance and replacements invested over three years, improvements in waste water and filtration plants and $8.9 million for special projects from 1998 to 2000 aimed at improving primary plants so as to guarantee compliance from all six primary plants. A total of $5.3 million was invested in the Aguadilla regional plant. New operations personnel and new managerial staff have been contracted in the primary treatment plants. In the Aguadilla regional plant alone, four managerial positions were created. Furthermore, plant operators have undergone more training, which is very important. Uniform operating procedures were designed and implemented successfully. Advanced Primary treatment is also being provided and there has been installation of telemetry systems. Furthermore, permanent monitoring equipment will be installed by the end of 2000.

23. EPA Response: EPA acknowledges the work of PRASA and its past contractor to upgrade the operation, maintenance, and management of its Aguadilla RWWTP. However, costs associated with the above actions are not a part of the 301(h) decision process.

EPA's approval of the Aguadilla RWWTP 301(h) waiver from the requirements of secondary treatment is based on the applicant's demonstration that the Aguadilla RWWTP meets all 301(h) requirements, including compliance with all applicable WQS necessary to assure protection of human health and the protection and propagation of a BIP of fish, shellfish and wildlife, in the vicinity of the ocean outfall, as required by regulations contained in 40 CFR Part 125, Subpart G.

24. Comment: One commenter states that a) the EPA permit requires that the effluent discharge point had to be located one and a half miles from the coast, the outfall is not located one and a half miles off the coast and that EPA should require that the outfall be extended so

that it terminates a mile and a half off the beach.

b) The waters in the vicinity of Aguadilla RWWTP are classified SC, indirect contact, and that since primary contact recreation takes place at local beaches, these waters should be reclassified to Class SB which allows primary contact.

24. EPA Response: a) Neither EPA nor PREQB regulation/law require that an ocean outfall pipe be located one and one half miles from shore. The Aguadilla RWWTP NPDES permit does not contain a requirement that the outfall be located one and a half miles from shore. The Aguadilla RWWTP ocean outfall, including the "Y" shaped diffuser, is located approximately 750 m (2,450 ft) from shore and discharges to Class SC waters.

b) This public notice is limited in scope to EPA's decision to approve the Aguadilla RWWTP 301(h) waiver. Since the commenter's statement that the waters in the vicinity of the Aguadilla RWWTP should be reclassified to Class SB is beyond the scope of this public notice, EPA will not address this comment in this forum.

25. Comment: One commenter states that a) substantial improvements and advanced treatment are meant to fool the public. The EPA knows about the overuse of polymers that threaten to present problems in the future. One of the features common to all the communities that we have seen, where there is an excessive use of polymers, is the infamous gray foam that floats around in the bay. The fishermen, the surfers, and the swimmers, all comment on it at all the beaches. Unfortunately, that foam will not dissolve. That foam is made of substances that will remain floating around forever on top of our waters.

b) So, the advanced treatment is a trick, it is dangerous, and it is a public expense because of the use of chemicals…additional chemicals, in lieu of converting the plant to a secondary treatment facility.

25. EPA Response: a) The addition of the polymer causes increased flocculation and settling of solids within the primary settling tanks. The polymer binds to the solids in the effluent, settles out of the effluent, and is incorporated into the sludge during the primary settling process. This process does not cause the creation of an excessive foam that "...is made of substances that will remain floating around forever on top of the waters."

b) EPA's approval of the Aguadilla RWWTP 301(h) waiver from the requirements of secondary treatment is based on the applicant's demonstration that the Aguadilla RWWTP meets all 301(h) requirements, including compliance with all applicable WQS necessary to assure protection of human health and the protection and propagation of a BIP of fish, shellfish and wildlife, in the vicinity of the ocean outfall, as required by regulations contained in 40 C/FR Part 125, Subpart G.

EPA has no authority to require that an ocean discharge meeting the requirements of law and regulation, in this case 40 CFR Part 125 Subpart G, be eliminated in favor of land-

based discharge alternatives, secondary treatment, or other types of "high efficiency, high quality" wastewater treatment plants. The Government of Puerto Rico seeks approval of a 301(h) waiver for the ocean discharge of advanced primary effluent. The construction of a secondary treatment facility and the O&M associated with maintaining a secondary treatment facility would greatly exceed the cost associated with the addition of a polymer to achieve an advanced primary effluent.

26. Comment: One commenter states that: a) the Aguadilla Regional WWTP has not been able to constantly comply with WQS. In a report from January, 2000, a notification of noncompliance was sent to the plant by the EPA. The discharge did not remain within the effluent limits and did not comply with the conditions of the permit, the coliforms or bacteria that directly affect people were well above 142,000 colonies per 100 milliliters, when the maximum is of 10,000 for waters that do not have direct contact with people;

b) EPA found 17 out of the 27 tributary pump stations of the facility were in poor operational condition, and as a result, in 1999, EPA issued an Administrative Order and has fined PRASA over one million dollars;

c) the plant has consistently exceeded limits on copper, cyanide, "sulfa and/or sulfur," and silver;

d) With respect to residual chlorine, which has always been a problem: i) residual chlorine is always exceeding maximum limits by four times, or more yet PRASA claims compliance at the end of the pipe; ii) questions what happens to the chlorine from when it is released at the plant to when it gets to the end of the pipe?; iii) it does not disappear. It reacts with the water and turns into carcinogenic compounds that are not being measured; iv) states that high residual chlorine levels are justified because it is believed to kill bacteria, however, the bacteria is consistently exceeding maximum limits , vi) recommend that the use of chlorine as a disinfectant be evaluated, since we are sending a lot of chlorine into the sea, and we still have high bacteria counts;

e) PRASA and EPA are not addressing the hepatitis-causing viruses, or the viruses that cause gastrointestinal problems, they are only measuring coliform, which is not a good indicator in seawater; and that "enterococci", which are resistant to salinity and not total or fecal coliform should be monitored in salt water

26. EPA Response: a) EPA acknowledges that the Aguadilla RWWTP has not been in consistent compliance with effluent limitations since it began operations. However, since the Government of Puerto Rico hired a contractor to manage PRASA and its facilities, the Aguadilla RWWTP has dramatically improved its performance (see response 14). Since January 2000, except for exceedence of effluent limits for: TSS, in June 2002; total coliform, in February 2001; and turbidity, in April 2000, May 2001 and June 2002; the Aguadilla RWWTP has consistently complied with its effluent limitations. It should be noted that all effluent limit exceedences of turbidity occurred during heavy rains and

PRASA is currently doing infiltration/inflow studies in order to minimize rain contributions to the Aguadilla collection system.

With respect to the exceedences of total residual chlorine (TRC) frequent exceedences of its limit in plant's effluent were being reported until PRASA began using the EPA and EQB agreed upon method (since January 2002), which allows PRASA to estimate the level of TRC at the point of discharge to the ocean (accounting for the travel time through the outfall pipe). Since PRASA has been using this "time of travel" monitoring method approach the Aguadilla RWWTP has significantly increased compliance with its TRC effluent limit of 0.5 mg/L. There is evidence that a turn-around has occurred at this facility with respect to its compliance status.

b) Regarding the operation of the tributary pump stations, PRASA repaired the pump stations as required by the Administrative Orders issued by EPA. EPA has been and will continue to inspect these stations to insure that they continue to operate properly, in the future.

c) With respect to copper, cyanide, sulfide, and silver, the previous Aguadilla RWWTP NPDES permit does not contain effluent limits for copper and cyanide. Effluent limits for copper and cyanide have been added in the 301(h) modified NPDES permit. The final effluent limits that have been imposed, as a result of EPA's 301(h) review, will assure that the Aguadilla RWWTP does not cause or contribute to the exceedence of copper or cyanide in the ambient receiving water. The Aguadilla RWWTP has, since January 1999 continuously met its effluent limits for silver and sulfide.

d) With respect to residual chlorine exceedences, as explained above, PRASA had been analyzing effluent samples for residual chlorine without allowing for time of travel through the outfall pipe. After several discussions held between EPA and EQB it was determined that allowing the permittee to account for time of travel when reporting effluent levels of residual chlorine would allow the best possible estimation of chlorine levels at the point of discharge. Furthermore, by using this approach, use of chlorine would be minimized since the point of achieving compliance is in the ocean and not at the plant. This reduction of the use of chlorine is beneficial to the environment, since it will assure compliance with pathogen requirements and will minimize the formation of any other toxic substance with the remaining chlorine. PRASA has demonstrated that the Aguadilla RWWTP has been in compliance with its residual chlorine limit of 0.5 mg/L, since it began assessing residual chlorine levels using the time of travel model. PRASA has demonstrated to EPA's satisfaction that the Aguadilla RWWTP does not discharge high levels of residual chlorine and is in compliance with it residual chlorine permit limit.

EPA regulations require that proper disinfection is provided to wastewater in order to achieve pathogen requirements. EPA cannot require a permittee to use a specific method to disinfect its effluent but must require compliance with all limits. EPA believes that by using this new approach, chlorine use is being minimized and compliance with pathogen

requirements is being achieved.

e) All of the 301(h) ambient receiving water monitoring stations sampled by PRASA during its ten Quarterly Waiver Monitoring events (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c) are located in Class SC waters. The applicable pathogen criteria for Class SC secondary contact waters are as follows:

> **1) Total Coliform: the geometric mean of a series of representative samples (at least five samples) of the waters taken sequentially in a given instance shall not exceed 10,000 colonies/100 mL.**
>
> **2) Fecal Coliform: the geometric mean of a series of representative samples (at least five samples) of the waters taken sequentially in a given instance shall not exceed 2,000 colonies/100 mL. Not more than 20% of the samples shall exceed 4,000 colonies/100 mL.**

As explained in response # 31, based on the DMR data and the total and fecal coliform data presented in ten 301(h) Waiver Quarterly Monitoring Reports (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c), since January 2000 (except total coliform in February 2001) there have been no violations of the Aguadilla RWWTP effluent limits for total and fecal coliform. The facility has been able to consistently meet total and fecal coliform limits since then.

Based on 301(h) Waiver Quarterly Monitoring Reports data (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c) and DMR data (see response # 31 for details) EPA concludes that the Aguadilla RWWTP effluent does not cause or contribute to an exceedence of the PREQB criteria for pathogens in the receiving water and is, therefore, protecting human health in the receiving waters of the Aguadilla RWWTP ocean outfall.

27. Comment: One commenter states that advanced primary treatment involves adding ferric salts to the effluent, so that the solids deposit more quickly. Ferric salts react with the inorganic phosphorus; this creates an insoluble precipitate, and the solids sink to the bottom. But this reaction is dependent on the pH level, so they must alter the pH level of the water prior to adding the ferric salts. After the precipitate has sunk to the bottom, once again, they have to normalize the pH level before dumping those waters in the sea. The problem with this primary advanced treatment, is that it will have precipitates. That if the waiting time in the plant is not sufficient, they can be released with the discharge. They are insoluble precipitates, that is to say, they will eventually be deposited at the bottom of the sea, that is, if they are released. The other problem is that PRASA, in order to clean the water, will have to add a great deal of chemicals so as to accelerate the deposit process. The EPA stated , on 10 August, 2000, "although advanced primary treatment provides the required amount of environmental protection, secondary treatment, which uses bacteria for aeration to degrade the discharge, is what will in the end reduce the release of pollutants into Puerto Rico's ocean waters."

27. EPA Response: The use of polymer to increase solids sedimentation is done on a plant specific basis. Depending on the characteristics of the facility's sewage (pH, temperature, etc.), a specific polymer is selected. Prior to initiating the polymer application, it is necessary to conduct several tests (jar tests) to determine the appropriate rates of polymer needed for that particular influent in order to maximize solids sedimentation and minimize the amount of insoluble precipitates that could be discharged with the effluent. In order to maximize sedimentation, minimize discharge of insoluble precipitates, and reduce foaming, the polymer is added to the effluent by an automated system on a flow proportional basis.

As agreed in the August 10, 2000 "Memorandum of Agreement to Voluntarily Achieve Secondary Treatment between the Government of Puerto Rico and the U.S. EPA Region 2", PRASA would commit to continue providing advanced primary treatment through the use of chemical addition, in order to minimize the loadings of TSS and other pollutants pending the upgrade to full secondary treatment. Therefore, the APT requirement contained in Table I - Technology-Based Effluent Limitations Note 2 will remain in the Aguadilla 301(h) modified NPDES permit.

As explained in detail in EPA's Aguadilla Decision Document entitled "Analysis of the Section 301(h) Secondary Treatment Waiver Application for the Aguadilla Regional Wastewater Treatment Plant", the Aguadilla RWWTP is being operated at an advanced primary level, which PRASA has demonstrated is sufficient to meet all nine criteria in Section 301(h), as implemented by regulations contained in 40 CFR Part 125, Subpart G, including compliance with all applicable NPDES permit limits and all WQS applicable to Class SC, assuring the protection and propagation of a BIP of fish, shellfish and wildlife, in the vicinity of the Aguadilla RWWTP ocean outfall.

C. Ambient Water Quality and Compliance with Water Quality Standards and Water Classification:

28. Comment: a) The Aguadilla RWWTP must comply with WQS applicable to and SC waters and those applicable to SB waters. b) The Aguadilla Regional WWTP effluent has not been able to constantly comply with WQS, has not met the requirements of 301(h) and has continued to violate its permit limits. For this reason the commenter is opposed to the 301(h) discharge, any increase in the 301(h) discharge and to the granting of a 301(h) waiver for the Aguadilla RWWTP.

28. EPA Response: a) The waters in the vicinity of the Aguadilla RWWTP discharge, from the zone subject to the ebb and flow of tides (mean sea level) to 19.1 km (10.3 mi) seaward, are classified SC waters. The nearest Class SB are located at Punta Boqueron south to Mayaguez and at Punta Borinquen north of Arecibo and include those waters in the zone subject to the ebb and flow of tides (mean sea level) to 500 m (1,640 ft) seaward. The waters located from 500 m offshore of this area, to a maximum distance of 19.1 km offshore (10.3 mi) are classified SC, suitable for secondary contact. The Aguadilla diffuser is located over 750 m (2,450 ft) from shore and east of Punta Boqueron, therefore, the

waters immediately adjacent to the Aguadilla diffuser from the beach to 19.1 km offshore are Class SC waters. Thus, the Aguadilla RWWTP must comply with WQS applicable to SC waters and demonstrate that its discharge will not violate applicable water quality in Class SB waters.

b) EPA acknowledges that the Aguadilla RWWTP has not been in consistent compliance with effluent limitations since it began operations. However, since the Government of Puerto Rico hired a contractor to manage PRASA and its facilities, the Aguadilla RWWTP has dramatically improved its performance (see response 14). EPA considers 301(h) Waiver Monitoring Study data as evidence that a turn-around has occurred at the Aguadilla RWWTP with respect to its compliance status. EPA will remain vigilant to ensure that full, continuing compliance is achieved.

29. Comment: The Aguadilla RWWTP has consistently exceeded its effluent limits for the following substances: a) pathogens, b) BOD, c) TSS, d) turbidity, e) cyanide, sulfide, f) fluoride, g) phenolic substances, h) residual chlorine, i) copper, j) silver, lead, zinc, k) pesticides, and l) toxicity.

29. EPA Response: Based on the DMR data and the data presented in PRASA's ten Quarterly Monitoring Reports (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c), EPA has determined, as explained below, that a turn-around has occurred at the Aguadilla RWWTP with respect to its compliance status (see response 14) and EPA expects PRASA will achieve compliance with those substances which are being limited for the first time in the Aguadilla RWWTP 301(h) modified NPDES permit.

a) Total and Fecal Coliform (pathogens): Since January 2000 (except for February 2001) the Aguadilla RWWTP has been in compliance with its effluent limits for total and fecal coliform.

b) BOD_5 - Since January 2000, the Aguadilla RWWTP has continuously met its NPDES permit limit and the 301(h) primary floor requirement of 30% removal of BOD_5.

c) TSS - Since January 2000, with the exception of June 2002, the Aguadilla RWWTP has met the 301(h) monthly average TSS limit of 50%. The Aguadilla RWWTP monthly average TSS removal for June 2002 was 46% (above the primary floor but below the NPDES effluent limit).

d) Turbidity - Since January 2000, except for exceedences of effluent limits for turbidity, in April 2000, May 2001 and June 2002, the Aguadilla RWWTP has consistently complied with its effluent limitation for turbidity. It should be noted that all effluent limit exceedences of turbidity occurred during heavy rains. For that reason, EPA issued an Administrative Order (CWA-02-99-3100) requiring PRASA to do an infiltration/inflow (I/I) study for Aguadilla RWWTP sanitary sewer system. It is believed that once the study is completed and the necessary repairs are made the I/I problem and resulting increased

turbidity will be minimized.

e) Cyanide and sulfide - The current Aguadilla RWWTP NPDES permit does not contain effluent limits for cyanide or sulfide. Effluent limits for cyanide and sulfide have been included in the proposed 301(h) modified NPDES permit. The final effluent limits that have been imposed, as a result of EPA's 301(h) review, will assure that the Aguadilla RWWTP does not cause or contribute to the exceedence of cyanide or sulfide in the ambient receiving water.

Although, at the time of this review, the 301(h) modified NPDES permit is not in effect and the permit in effect, at the time of this review, contained no effluent limits for cyanide or sulfide, a review of the data contained in PRASA's ten Quarterly Monitoring Reports (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c), indicates that Aguadilla RWWTP has discharged cyanide and sulfide below the effluent limits included in the 301(h) modified NPDES permit since April 2000 and January 1999, respectively.

f) Fluoride - Neither the permit currently in effect nor the Aguadilla RWWTP 301(h) modified NPDES permit being issued contain an effluent limit for fluoride. However, the PREQB WQS for fluoride is 1300 ug/L. Based on data contained in PRASA's ten Quarterly Monitoring Reports (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c), the concentrations of fluoride in the plant's effluent samples ranged from 66 to 274 ug/L, which are significantly lower than the applicable WQS. Therefore, there is no reasonable potential for this substance to exceed WQS.

g) Phenolic Substances - The current Aguadilla RWWTP NPDES permit does not contain effluent limits for phenolic substances. Interim (95.4 ug/L daily maximum) and final (10 ug/L daily maximum) effluent limits for phenolic substances have been included in the 301(h) modified NPDES permit. The final effluent limits that have been imposed, as a result of EPA's 301(h) review, will assure that the Aguadilla RWWTP does not cause or contribute to the exceedence of phenolic substances in the ambient receiving water.

Although, at the time of this review, the 301(h) modified NPDES permit was not in effect and the permit in effect, at the time of this review, contained no effluent limits for phenolic substances, a review of the data contained in PRASA's ten Quarterly Monitoring Reports (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c), indicates that Aguadilla RWWTP has discharged phenolic substances below the effluent limit included in the 301(h) modified NPDES permit since February 2000.

h) Total Residual Chlorine (TRC) - TRC levels in the Aguadilla effluent ranged from 0.37 to 7.89 mg/L. The frequent exceedences of the TRC effluent limit occurred until January 2002. EPA has determined these reported exceedances were a result of PRASA's monitoring method. Since PRASA began using the EPA and EQB agreed upon "time of travel" monitoring method of estimating the level of TRC, at the point of discharge to the ocean, PRASA began complying with its TRC effluent limit. This method accounts for the

degradation of chlorine during the travel time through the outfall pipe. Since PRASA has been using this "time of travel" monitoring method approach the Aguadilla RWWTP has significantly increased compliance with its TRC effluent limit of 0.5 mg/L. There is evidence that a turn-around has occurred at this facility with respect to its compliance status.

i) With respect to copper, the previous Aguadilla RWWTP NPDES permit did not contain effluent limits for copper. Effluent limits for copper (interim limit of 75.4 ug/L, and a final limit of 2.9 ug/L) have been included in the 301(h) modified NPDES permit. The final effluent limit that has been imposed, as a result of EPA's 301(h) review, will assure that the Aguadilla RWWTP does not cause or contribute to the exceedence of copper in the ambient receiving water.

j) Silver, Lead, Zinc - Both the current NPDES permit and the proposed 301(h) modified 301 NPDES permit for the Aguadilla RWWTP include effluent limits for silver, total lead and total zinc. These limits have been met continuously since January 1999.

k) Of the pesticides analyzed in the Aguadilla RWWTP effluent only two pesticides (chlorpyrifos and coumaphos) were found in amounts above detection levels. Both pesticides, however, comply with WQS at the edge of the mixing zone, after applying the CID of 151:1.

i) Whole effluent toxicity tests assess toxicity of all substances (including their synergistic effects) in the plant's effluent. The PRWQS include the numeric toxicity criteria of 0.3 TU_a (Criterion Maximum Concentration or CMC) acute toxicity and of 1.0 TU_c (Criterion Continuous Concentration or CCC) chronic toxicity. As part of the 1999 Aguadilla NPDES application (PRASA,1999b) and the 1999 Mixing Zone Study (PRASA, 1999a), the applicant presented 1988, 1993, and 1998 toxicity tests results. The most sensitive end points of both acute and chronic toxicity data were observed on *Champia parvula* in the 1988 toxicity tests. The results indicated that *Champia parvula* was the most sensitive species, with an acute toxicity, LC_{50}, of 7.1 percent effluent and chronic toxicity, NOEC, of 5.0 percent effluent. After allowing for a CID of 151:1, the acute and chronic toxic units after dilution are 0.1 TU_a and 0.13 TU_c both of which are below PREQB's acute and chronic toxicity criteria of 0.3 TU_a and 1.0 TU_c .

In summary, EPA has determined that the Aguadilla RWWTP discharge complies with all applicable requirements of the Commonwealth WQS for Class SC waters and, as applicable, all criteria for Class SB waters. EPA will remain vigilant to ensure that full compliance is being maintained.

30. Comment: A number of commenters state that PRASA would deny responsibility for the coliform exceedence detected in Aguadilla Bay by pointing out that it disinfects the RWWTP effluent. However, PRASA cannot deny that fecal and total coliform have been detected in high densities in its effluent. Exceedence to the plant's fecal coliform effluent limits have been

reported for December 1999 (2491), January 1999 (7000), December 1997 (3000), October 1996 (2100), and September 1996 (10000). Exceedence of the plant's total coliform effluent limits have been reported for December 1999 (28000), May 1999 (10300), January 1999 (130000), March 1997 (16000), October 1996 (11000), September 1996 (76000), April 1996 (23700), March 1996 (66000), and November 1995 (18800).When it validated the 1993 mixing zone, PRASA reported a total coliform density of 24,209 col/100 mL in its effluent, 2.4 times higher than the WQS. *1995 Mixing Zone Validation, DMR, NPDES PR0023 736, Outfall 001, November 1995.* In a report from January, 2000, a notification of noncompliance was sent to the plant by the EPA. The EPA reported an effluent geometric mean of 142,074 col/100 mL for total coliform bacteria and of 9,407 col/l00 mL for fecal coliform bacteria, which is 14 and 4 times higher, respectively, than the applicable WQS. *EPA NPDES Compliance Sampling Inspection Report, January 25-26, 2000, Exh. 12, Table 5.* Commenters submit that even fulfilling the criteria under section 301(h) does not release the subject facility from meeting WQS and other applicable federal laws and regulations required to be met under Section 301(b)(l)(c)

30. EPA Response: The Aguadilla RWWTP permit contains total and fecal coliforms limits, which are the applicable WQS for Class SC waters, of 10,000 col/100 mL and 2,000 col/100 mL, respectively.

EPA acknowledges that the Aguadilla RWWTP has not been in consistent compliance with its permit effluent limitations since it began operations. EPA does not dispute total and fecal coliform exceedences reported in the January 2000 NPDES Compliance Sampling Inspection Report. The Report indicates that the grit chamber (built as a part of the plant's optimization in November 1999) was not in use at the time of the inspection. During the inspection it was observed that at different points of the clarifiers, wastewater was not flowing over the weirs. Over time this causes uneven sludge settling with poor solids removal. Poor solids removal could have been a reason for unsatisfactory disinfection. The permittee was sent a Deficiency Notice. The deficiencies were corrected.

Based on the DMR data and the total and fecal coliform data presented in ten Quarterly Monitoring Reports (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c), since January 2000 (except one exceedence of total coliform in February 2001) there have been no violations of the Aguadilla RWWTP effluent limits for total and fecal coliform.

It is EPA determination that the Aguadilla RWWTP effluent does not cause an exceedence of the PREQB criteria for pathogens in the receiving water nor contribute to total and fecal coliform loads to the Aguadilla Bay. EPA has determined that the Aguadilla RWWTP discharge complies with all applicable requirements of the Commonwealth WQS and other applicable federal laws and regulations required to be met under Section 301(b)(l)(c).

31. Comment: a) The PREQB regulations contain a standard for fecal coliform bacteria for Class SC waters, which are waters designated suitable for secondary contact activities such as fishing and boating and Class SB waters, which are waters designated suitable for primary

contact activities, such as swimming, surfing and diving. A thorough examination of the sampling conducted by PRASA in Aguadilla Bay demonstrates a clear and consistent pattern of violations to the coliform standards in the area. In 1970, Sarriera and Associates reported total coliform densities as high as 73,500 col/100 mL, with densities exceeding the applicable Class SB standard in Stations B3, C3, D3 and E3. *Table II-B5.2 of l987Application.* These stations were located along the shoreline from the mouth of the Guayabo River to the south to the mouth of the Culebrinas River to the north. *Id, Fig. II-B5.1.* Violations were also reported in the Dl and D2 stations, located just offshore of the mouth of the Culebrinas River. The sampling in January of 1987 found low coliform densities, which did not violate WQS. When coliforms were next measured by PRASA, they again detected densities in violation of the WQS. In the sampling conducted in October 1999, PRASA reported fecal coliform densities at station A7 with more than 20% of the samples exceeding the 4,000 col/l00 mL standard. Again in January of 2000, one station located at the edge of the mixing zone (Station A2) contained fecal coliform densities in violation of this same standard.

b) The PREQB has detected violations to standards for enterococci bacteria, another indicator of potentially fecal pathogenic contamination. *PREQB November 2000, Water Quality Area, STORET System Monitoring Stations,* Exh.7. All three stations sampled in Aguadilla Bay reflect enterococci densities that violate the 35 col/l00 mL standard for Class SB waters, *ld,* which is the applicable standard. Furthermore, two stations SB2-002 and Station 043 contain at least one sample with fecal coliform densities near enough to the 2000 col/l00 mL standard as to be worrisome.

c) Other concerns regarding the total and fecal coliform data are: i) PRASA failed to take the required number of replicates necessary to demonstrate compliance with WQS; ii) EPA failed to define a mixing zone for fecal coliform or total coliform. Therefore, compliance with WQS must be achieved at the end of the pipe and at all points within and outside of the ZID; and iii) EPA admits that the water column in the discharge point is not generally stratified and that the freshwater effluent rises quickly to the top of the water column, where it becomes entrained with surface currents. This means that the bacteria and viruses that are inevitably contained in the plant's discharge gain easy access to those surface waters where there is more likely to be direct human contact.

31. EPA Response: a) EPA acknowledges that the Aguadilla RWWTP has not been in consistent compliance with effluent limitations since it began operations. However, since the Government of Puerto Rico hired a contractor to manage PRASA and its facilities, the Aguadilla RWWTP has dramatically improved its performance (see response 14). The Aguadilla RWWTP permit contains end-of-pipe total and fecal coliforms limits, which are the applicable WQS for Class SC waters, of 10,000 col/100 mL and 2,000 col/100 mL, respectively. Since January 2000, except for an exceedance of its total coliform effluent limit in February 2001, the Aguadilla RWWTP has consistently complied with its effluent limitations for total and fecal coliform.

The PREQB ambient WQS for total and fecal coliform in Class SC waters are as follows:

The geometric mean of a series of at least five samples taken sequentially during a given instance shall not exceed 10,000 colonies/100 mL of total coliform or 2,000 colonies/100 mL of fecal coliform and not more than 20 percent of the samples shall exceed 4,000 colonies/100mL of fecal coliform.

During PRASA's ten Quarterly 301(h) Waiver Monitoring surveys (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c), PRASA collected a total of 212 water samples for analysis of pollutants including total and fecal coliform. During each of ten monitoring events, samples were collected at three depths per station (surface, mid-depth and bottom), at seven stations. For each monitoring event, a total of 21 samples at each station were collected. Furthermore, during the 4th and 7th Quarterly Monitoring events, two additional samples were obtained at the surface boil station. All seven monitoring stations are located in Class SC waters.

The following is EPA's review of effluent monitoring data from DMRs and effluent and ambient data contained in PRASA's ten Quarterly Monitoring Reports (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c) for total and fecal coliform and a comparison with PREQB's Class SC WQS, for total and fecal coliform:

Effluent data - NPDES compliance monitoring for both total and fecal coliform requires PRASA to take a minimum of five effluent samples sequentially in a given instance. Based on the DMR data and effluent data presented in PRASA's ten Quarterly Monitoring Reports (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c), since January 2000 (except for February 2001) the Aguadilla RWWTP has been in compliance with its end-of-pipe effluent limit of 10,000 colonies/100 mL for total coliform.

Since January 2000, the Aguadilla RWWTP has been in consistent compliance with its effluent limit of 2,000 colonies/100 mL for fecal coliform.

Ambient Data - Ambient data for total coliform indicate that only nine or 4.2% of the 212 ambient samples taken during the ten monitoring events exceeded the Class SC criteria for total coliform of 10,000 colonies/100 mL (one at edge of mixing zone station A1, two at edge of mixing zone station A2, four at farfield station A3, one each at background stations A5 and A7).

Ambient data for fecal coliform indicate that only five or 2.4% of the 212 ambient samples taken during the ten monitoring events exceeded the Class SC criteria for fecal coliform of 2,000 colonies/100 mL (one each at edge of mixing zone stations A1 & A2, two at farfield station A3, and one at background station A7).

Only four or 1.9% of the 212 ambient samples taken during the ten monitoring events exceed 4,000 colonies/100 mL of fecal coliform. Thus, compliance is demonstrated for the Class SC criteria that no more than 20% of the samples should exceed 4,000 colonies/100 mL of fecal coliform.

It is EPA's determination that, because the Aguadilla RWWTP permit contains Class SC based end-of-pipe limits of 10,000 col/100 mL and 2,000 col/100 mL for total and fecal coliform, respectively, and because, since January 2000, the effluent data indicates that total coliform (except during February 2001) and fecal coliform have been in compliance with their respective NPDES permit effluent limits, the Aguadilla RWWTP effluent does not cause violations of the Class SC total and fecal coliform criteria in the receiving waters, including the ZID area and the effluent boil. Therefore, it is EPA's determination that the Aguadilla RWWTP discharge is protective of human health.

However, the ambient data identifies elevated levels of total and fecal coliform in the receiving water. EPA believes these high ambient levels are the result of high levels of total and fecal coliform associated with the freshwater plumes of the Culebrinas River. EPA will continue to work with PREQB in programs such as the NPDES permitting program, the nonpoint source management program, and the total maximum daily load (TMDL) program, towards the improvement of the water quality in the Culebrinas River and in Aguadilla Bay.

b) The Commenter states that PREQB has detected violations to standards for enterococci bacteria during its investigations in the Aguadilla Bay *PREQB November 2000, Water Quality Area STORET System Monitoring Stations, Exh. 7.* The Commenter further states that all three stations sampled in Aguadilla Bay reflected enterococci densities that violated the 35 colonies/l00 mL standard for Class SB waters which is the applicable standard.

During its ten Quarterly Monitoring surveys (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c), PRASA collected a total of 212 ambient water samples for enterococci analysis. Out of the 212 ambient samples, collected in Class SC waters, only 11 or 5.2% (two at A1 (MZ) station, two at A2 (MZ) station, three at A3 (farfield) station, one at A5 (background) station, and three at A6 (ZID) station) were reported above the ambient WQS for Class SB waters. There are no enterococci standards in Class SC waters.

EPA regulations require that proper disinfection is provided at Aguadilla RWWTP in order to achieve the appropriate Commonwealth criteria for pathogens. Based on the DMR data for Class CS waters the data presented in ten 301(h) Waiver Quarterly Monitoring Reports (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c), indicate that, since January 2000 (except total coliform in February 2001) there have been no violations of the Aguadilla RWWTP effluent limits for total and fecal coliform.

EPA has determined that the Aguadilla RWWTP effluent does not cause or contribute to an exceedance of the PREQB criteria for total and fecal coliform in the receiving water and is, therefore, protecting human health in the receiving waters of the Aguadilla RWWTP ocean outfall.

The Culebrinas River input is known to be a major source of pathogens to Aguadilla Bay. EPA will continue to work with PREQB in developing and implementing Clean Water Act

programs to improve the water quality in the Culebrinas River.

c) i) EPA acknowledges that compliance with pathogen criteria is based on the geometric mean of at least five consecutive samples taken sequentially. PRASA has demonstrated that Aguadilla RWWTP is in compliance with its effluent limits for total and fecal coliforms. EPA, therefore, does not expect Aguadilla RWWTP to cause or contribute to ambient exceedances of total and fecal coliform.

ii) EPA agrees that a mixing zone for fecal or total coliform had not been defined. Therefore, compliance with WQS for total and fecal coliform must be achieved at the end-of-the-pipe and at all points within and outside of the ZID.

Since January 2000 the Aguadilla RWWTP has achieved and has demonstrated its ability to remain in continuing compliance (except for total coliform during February 2001) with its NPDES permit limits as well as all 301(h) requirements. The Aguadilla RWWTP is currently a well operated advanced primary facility.

iii) EPA agrees that at times during PRASA's Quarterly Monitoring surveys, (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c) the effluent plume rose to the surface of the water and was visible as a boil. This is expected. It should be noted that CID is defined as the point where the effluent plume is either trapped or reaches the surface. In general the further the height of rise of a effluent plume the greater the CID. Therefore, a surfacing plume has a greater CID than if the same plume was to trap below the surface of the water. High rate diffusers, used at Aguadilla RWWTP plant, are designed to achieve rapid initial dilution. Depending on the properties of the receiving water, such as temperature, salinity, density, and current speed, the Aguadilla effluent plume may trap below the surface or rise to the surface. EPA uses worst case conditions to be conservative and uses CID of 151:1, based on a trapping plume, to assess compliance with the requirements of 301(h). Most of the time, when conditions are better than worst case conditions, such as higher current speeds and no stratification, the effluent plume will quickly travel further vertically and horizontally and achieve greater initial dilutions.

Compliance with total and fecal coliform was addressed in a) above. However, it should be noted that in the 4th and the 7th monitoring events PRASA found and sampled the surfacing plume 'boil'. In both events, total and fecal coliform levels in the plume 'boil' were below the Class SC criteria and fecal coliform and enterococci levels were below the Class SB criteria.

32. Comment: The plant's impacts to local human populations are unacceptable. The record contains testimony from a medical doctor relating the high incidences of skin rashes and other diseases that could be attributable to fecal pollution among his patients that use the beaches near the RWWTP's discharge. The deposition of solids containing potentially pathogenic bacteria right up to the shoreline is a cause for public health concern. Dr. Roque Roman notes that solids emitted by the RWWTP are expected to contain adhered bacteria. *Statement of Dr. Roque*

Roman, Exh. 5, S39. These adhered bacteria could include pathogenic organisms. According to PRASA's own predictions, solids from the RWWTP settle out in an area right up to the shoreline from Punta Boquerón to the north of the Culebrinas River mouth. 1987 Application, Fig. IIIA4.3. E. coli and Vibrio cholera can survive for considerable periods of time and even reproduce in sediments. *M.A. Hood and G.E. Ness. 1982. Survival of Vibrio cholerae and Escherichia coli in estuarine waters and sediments. J. Appl. Environ. Micro biol. 43(4):578-584.* This means that the sediment will be contaminated by potentially pathogenic bacteria in areas that are very likely to be used by swimmers and other recreational activities. Indeed, this deposition will occur in areas designated as Class SB waters, where direct human contact recreation is allowed. Water quality is inadequate to support recreational activities. The Aguada and Aguadilla residents who use beaches and coastal waters for recreational purposes, including walking, jogging, swimming, and surfing and who use coastal waters for fishing have been affected by the discharges from the Aguadilla RWWTP. Residents experience reduced enjoyment of the coastal resources relating to the concerns about pollution.

32. EPA Response: The waters in the vicinity of the Aguadilla RWWTP outfall, from the zone subject to the ebb and flow of tides (mean sea level) to 19.1 km (10.3 mi) seaward, are classified SC waters. The Aguadilla diffuser is located 750 m (2,450 ft) from shore and east of Punta Boqueron; therefore, the waters immediately adjacent to the Aguadilla diffuser from the beach to 19.1 km offshore are Class SC waters. The Aguadilla RWWTP discharges to, and must comply with, the PREQB WQS applicable to SC waters. The Commonwealth WQS define Class SC waters as those "Coastal waters intended for uses where the human body may come in indirect contact with the water (such as fishing, boating, etc.), and for use in propagation and maintenance of desirable species." This water classification is part of the Commonwealth WQS Regulations which have been subject to public review and have been approved by EPA.

The nearest Class SB waters are located at Punta Boqueron south to Mayaguez and at Punta Borinquen north to Arecibo and include those waters in the zone subject to the ebb and flow of tides (mean sea level) to 500 m (1,640 ft) seaward. The waters located from 500 m offshore of this area, to a maximum distance of 19.1 km offshore (10.3 mi) are classified SC, suitable for secondary contact.

As explained in detail in comment 31(a) above, EPA has determined that the Aguadilla RWWTP effluent does not cause violations of the Class SC total and fecal coliform criteria in the receiving waters, including ZID area and the effluent boil. Therefore, it is EPA's determination that the Aguadilla RWWTP discharge is protective of human health in Class SC waters which are designated for secondary contact, such as fishing and boating. Class SC waters do not support primary contact. People should not swim, surf, dive or otherwise practice direct contact recreation in waters classified SC. While none of the sampling stations are located in Class SB waters, EPA has determined, based on the available effluent and ambient data, that the Aguadilla RWWTP discharge will not cause exceedences of the Class SB criteria for either fecal coliform or enterococci.

EPA agrees that waters designated Class SB should provide safe primary contact recreation such as swimming, surfing and diving, and that primary contact with these waters should not cause skin rashes or other diseases.

In order to assure Class SB waters are safe for primary contact a beach monitoring and assessment plan should be implemented. While EPA does not have the authority to require PRASA to implement a beach monitoring program, on October 10, 2000, the Beaches Environmental Assessment, and Coastal Health Act (or Beach Act) was signed into Law. The Beach Act requires EPA to publish performance criteria for monitoring and for prompt public notification of any exceedance. Recently, EPA awarded a grant to PREQB to develop a monitoring and assessment plan pursuant to the Beach Act. Once PREQB develops and submits its plan and EPA has reviewed and approved the plan, the beach monitoring and public notification program will be implemented, by PREQB.

EPA will also continue to work with PREQB in programs such as the NPDES permitting program, the nonpoint source management program, and the total maximum daily load (TMDL) program, towards the improvement of the water quality in the Culebrinas and Guayabo Rivers and in Aguadilla Bay. EPA believes that the implementation of beach monitoring, prompt public notification of any exceedance and the continued implementation of the above programs will assure that Classified SB provide safe primary contact recreational activities.

In summary, EPA has determined that the Aguadilla RWWTP discharge is in compliance with its effluent limits and all applicable requirements of the Commonwealth WQS for Class SC waters. EPA does not expect the Aguadilla RWWTP effluent to impact Class SB waters, including those beaches designated by PREQB as suitable for primary contact. EPA will remain vigilant to ensure that full compliance is being maintained.

33. Comment: The commenter states that the primary treatment is simply inadequate for the Aguadilla WWTP facility. A large-scale ocean discharge at this site should only be possible if non-discharge options are shown to be impossible, and if a more complex system of smaller on-site systems is proven infeasible. Even so, such a large-scale discharge is patently ineligible for a primary waiver, and would absolutely require at least tertiary treatment with advanced nutrient removal in order to protect EFH and human health.

33. EPA Response: The CWA does not require tertiary treatment for WWTPs and EPA has no authority to require that an ocean discharge meeting all the requirements of Section 301(h) of the CWA, and regulation, 40 CFR Part 125, be eliminated in favor of secondary or tertiary treatment. At this time, the Government of Puerto Rico seeks approval of a 301(h) waiver for the Aguadilla RWWTP ocean discharge of advanced primary effluent, and since the discharge meets all nine criteria of Section 301(h), EPA is approving this waiver.

EPA has no authority to require that an ocean discharge meeting all the requirements of

Section 301(h) of the CWA, and regulation, 40 CFR Part 125, be eliminated in favor of waste management options, including non-discharge opportunities and tertiary treatment. EPA successfully completed the Essential Fish Habitat (EFH) consultation. In a letter dated December 13, 2001, the National Marine Fisheries Service found that the Aguadilla RWWTP would not impact EFH. Since the Aguadilla RWWTP meets all nine criteria of Section 301(h), EPA is approving the waiver.

34. Comment: Impacts on local human populations also can result from bypassing and inadequate treatment of human wastes. Some of the fecal contamination is probably produced by the Aguadilla RWWTP because of pump station malfunctions. A series of pump stations are used to push raw sewage from its point of origin to the plant. Several of those pumping stations are poorly maintained and malfunction periodically. *EPA Compliance Evaluation Inspection, Agate-Aguadilla WWTP, September 7, 1999, Exh. 9.* At least some of those stations are located in the Culebrinas River watershed. Any time the pumps stop operating and the effluent overflows from the plant, it will end up in the nearest stream or water impoundment, and from there will make its way inexorably to the Culebrinas River. EPA inspectors have reported seeing raw sewage from the Moca Main Pump Station overflowing from the station and entering the Culebrinas River on at least two occasions. *EPA Administrative Orders EPA-CWA-II-98-118 and 1 00-116, Exhs. 10 and 11.* EPA documented an unreported bypass from this same pump station as recently as June 1, 1999. EPA Compliance Evaluation Inspection Agate-Aguadilla WWTP, September 7, 1999, Exh. 9. Untreated, undisinfected raw sewage contains potentially dangerous quantities of pathogenic bacteria. Because this pump station receives raw sewage from the town of Moca, the volume of untreated sewage entering the Culebrinas River during each bypass event is potentially significant.

34. EPA Response: EPA agrees that untreated, undisinfected raw sewage contains potentially dangerous quantities of pathogenic bacteria. When a pump station bypasses raw sewage, the volume of untreated sewage entering the Culebrinas River during each bypass event is potentially significant. Of all the pump stations tributary to the Aguadilla RWWTP, only the Moca Pump Station could discharge raw sewage directly into the Culebrinas River. EPA notes that, in the past, there had been problems with the Moca Main Pump Station which has caused raw sewage overflowing to the Culebrinas River. However, since June 1999, PRASA indicates no bypasses of raw sewage have occurred at the Moca Main Pump Station.

EPA is committed to eliminating sewage overflows, and has been taking enforcement action to compel compliance. PRASA has upgraded operation, maintenance and monitoring at the Aguadilla RWWTP and its tributary pump stations. It is very important that all sewage overflows, and illegal dumping of solid waste be reported to EPA immediately so EPA can properly investigate and take actions to correct such problems. The EPA contact for reporting such incidents is Mr. Jaime A. Geliga, and he may be reached at (787) 977-5840.

35. Comment: The absence of appropriate indicators of overall human pathogenicity for sewage

in tropical environments argues for exceptional care in dumping sewage into marine or estuarine waters in the region. This is especially true given the important and traditional linkages to the water for both recreational and economic uses, and the incipient upswing in tourist development in Western Puerto Rico. PRASA and EPA are not addressing the hepatitis-causing viruses, or the viruses that cause gastrointestinal problems, they are only measuring coliform, which is not a good indicator in seawater; and that "enterococci", which are resistant to salinity and not total or fecal coliform should be monitored in salt water.

35. EPA Response: EPA understands that total and fecal coliform may not be the best indicator of pathogens in tropical or temperate waters. The Commonwealth of Puerto Rico has adopted enterococci, which is EPA's suggested pathogen criteria for its Class SB primary contact waters but maintains the total and fecal coliform criteria for Class SC waters, secondary contact waters. Since the Aguadilla RWWTP discharges into Class SC waters, its permit contains total and fecal coliform limits.

Although the enterococci criteria do not apply to Class SC waters and all seven monitoring stations are located in Class SC waters, PRASA monitored enterococci at three depths each of the seven ambient monitoring station. The data contained in its ten Quarterly Reports (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c) indicate that of 212 ambient water samples analyzed for enterococci only 11 or 5.2% of the ambient samples were reported at levels above the ambient water quality criteria for Class SB waters.

EPA is working with EQB through the ongoing WQS triennial review process to determine the need for new/revised pathogen criteria for the Class SC waters in Puerto Rico and to adopt such criteria where necessary.

36. Comment:: a) The high-degree of riverine influence from Culebrinas River creates estuarine conditions in large portions of the Aguadilla Bay. In fact, the influence of the Culebrinas River is undoubtedly the single dominant ecological factor in the immediate discharge zone. The Culebrinas River and its discharge zone in Aguadilla Bay and the Atlantic Ocean are significantly degraded by nonpoint source pollution from the watershed. The degradation is exacerbated by the subject discharge and by spills and overflows from the sewage collection system for the Aguada plant. PRASA would seek to minimize the importance of consistent violations to the coliform standards by arguing that the bacteria are derived from the Culebrinas River. *First Quarterly Report, p. 3-19.* Indeed, PRASA and EPA have put together undeniable proof that the Culebrinas River is severely polluted, and that this pollution includes fecal and total coliform bacteria. As previously indicated, a 1970 sampling of near shore stations (50m depth) found fecal and total coliform densities higher than the WQS. *1987 Application, Table II-B5.2.* PRASA noted that *5* of the 6 stations were in close proximity to the river's discharges. *Id, p. B5.50.* PRASA went on to note that direct sampling of the Culebrinas River conducted in 1983 and 1984 found fecal coliform densities ranging from 3,800 to more than 60,000 col/100 mL, well above the river's WQS. *Id, Table II-C2. 1.* Densities of fecal streptococci, another group of bacteria indicative of fecal contamination were also high. Id. Indeed, the PREQB has concluded that the river consistently fails to comply with WQS, largely because it receives discharges from

4 WWTPs and other industry. *PREQB Fiscal Year 98303(d) List, Exh. 8.*

b) The area clearly suffers from periodically reduced salinity, and significant riverine inputs of sediment and other pollutants.

36. EPA Response: a) EPA notes that during periods of wet weather the Culebrinas River carries elevated levels of suspended solids (SS) and total and fecal coliform. The aerial photographs (NOAA 1999, 2001) clearly show that the Culebrinas plume reaches the Aguadilla Bay. Data obtained from two water-quality stations located on the Culebrinas River (USGS, 1999 and 2000) documents high river flows (up to 229 MGD), high turbidity (up to 340 NTU) and high levels of total and fecal coliform (up to 40,000 col/100 mL) in the waters of Culebrinas River.

b) EPA concurs with the commenters statement that the freshwater influence of the Culebrinas River is a "...dominant ecological factor..." in the ecology of Aguadilla Bay. However, any influence the Culebrinas River may have on the salinity of Aguadilla Bay is natural and not man induced. Therefore any salinity-based influence the Culebrinas River may have on the biota of Aguadilla Bay is also natural and not man induced.

37. Comment: a) "...EPA Region 2 scientists incorrectly concluded that the receiving waters of Aguada are 'not stressed." This enabled the plant to cover up from the violations pertaining to the CWAs." b) Aerial photos document that "obvious and chronic sediment discharge is seriously impacting the water quality of these waters.

37. EPA Response: a) In accordance with 40 CFR §125.58(z), stressed waters means "those ocean waters for which an applicant can demonstrate to the satisfaction of the Administrator, that the absence of a balanced indigenous population is caused solely by human perturbations other than the applicant's modified discharge."

EPA has reviewed the extensive chemical, physical and biological data collected in the vicinity of the Aguadilla RWWTP from 1985, 1987, and 1999 to 2002 which indicates that the Aguadilla RWWTP discharge supports the protection and propagation of a BIP of fish, shellfish and wildlife in its receiving water (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c, EPA, 2000a). EPA's finding are as follows:

> **a. Benthic Communities: based on the most recent data, the benthic communities are well balanced and are not adversely impacted by the Aguadilla RWWTP discharge.**
>
> **b. Coral Reefs/Communities: there are no "well-developed coral reef communities" located within the vicinity of the Aguadilla RWWTP. However, given the natural conditions of the area, the data provided by the applicant indicated that the sparse but healthy and diverse coral communities exist within 1.8 km of the discharge, and the limited coral growth on hard bottom in the vicinity of the Aguadilla RWWTP**

will not be adversely impacted.

c. Fish Communities: fish communities were diverse and healthy at all stations including the station nearest the outfall. All the fish observed were free of lesions or any other abnormalities. EPA successfully completed the Essential Fish Habitat (EFH) consultation. In a letter dated December 13, 2001, the National Marine Fisheries Service found that the Aguadilla RWWTP would not impact EFH.

d. Bioaccumulation of Toxic Pollutants: of the 150 toxic and organic substances tested in fish none were found at levels of concern. Bioaccumulation is not occurring in the vicinity of the Aguadilla RWWTP at levels of concern to either fish or humans.

Based on the above, it is EPA's conclusion that the maintenance and propagation of a BIP of shellfish, fish, and wildlife in the vicinity of the Aguadilla RWWTP has been demonstrated. Therefore, the waters in the vicinity of the Aguadilla RWWTP discharge are not considered stressed waters.

b) This comment is a general comment on water quality and not directed at EPA's decision to approve the Aguadilla RWWTP 301(h) application. EPA reviewed those aerial photos and acknowledges that the obvious and chronic sediment discharge is apparently from the Culebrinas River, and is potentially influencing the water quality of the Aguadilla Bay. EPA will continue to work with PREQB in programs such as the NPDES permitting program, the nonpoint source management program, and the total maximum daily load (TMDL) program, towards the improvement of the water quality of the Aguadilla Bay.

38. Comment:"Waivers to the CWA usually pertain to treatment plants with "deep"ocean outfalls. The Aguadilla Waste Water Treatment Plant (WWTP) discharges less than one half mile off the Aguada coastline in less than 50 feet of water."

38. EPA Response: A Section 301(h) marine discharge is defined by 40 CFR 125.57 (a)(9) as "the discharge of any pollutant into marine waters" which refers to a "discharge into deep waters of the territorial sea or the waters of the contiguous zone, or into saline estuarine waters where there is strong tidal movement and other hydrological and geological characteristics which the Administrator determines necessary to allow compliance with paragraph (2) of this section, and section 101(a)(2) of this Act".

EPA has determined that the Aguadilla ocean outfall meets the definition as an marine discharge and is eligible for a Section 301(h) waiver. The treated Aguadilla effluent is discharged to the Atlantic Ocean (Class SC waters) through an ocean outfall and a Y-shaped diffuser system. The end of the outfall pipe (the junction of the legs of the Y and the outfall pipe) is located at latitude 18° 24.436' and longitude 67° 11.266' (AFI 2000a). The discharge is 2,450 feet (750 m) off Punta del Bogueron into the Atlantic Ocean.

39. Comment: "The Aguadilla RWWTP discharge is surfacing in a boil."

39. EPA Response: EPA agrees that at times during PRASA's Quarterly Monitoring surveys, (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c) the effluent plume rose to the surface of the water and was visible as a boil. This is normal and expected. Initial dilution occurs quickly whether the plume is trapped below the surface by density gradients or rises to the surface and is visible as a boil.

High rate diffusers, such as the Aguadilla RWWTP diffuser, are designed to achieve rapid initial dilution. Depending on the properties of the receiving water, such as temperature, salinity, density, and current speed, the Aguadilla effluent plume may trap below the surface or rise to the surface. EPA uses critical initial dilution (CID) to assess compliance with the mixing zone requirements of 301(h).

CID is the lowest calculated dilution using worst case ambient conditions such as the 10 percentile current speed (2.2cm/sec), maximum observed density stratification May 1985, and the maximum daily flow of 16 MGD. Using the above parameters and current diffuser configuration of 15 open ports per leg of the diffuser, PRASA, using the EPA-approved UDKHDEN model, calculated a worst case CID of 151:1. The model predicted that the CID of 151:1, used by EPA for review of the Aguadilla RWWTP 301(h) application would trap a plume at depth of 5.7 m below the mean sea level. The length of the Aguadilla diffuser is 114 m (374.0 ft) and the maximum water depth is 17.4 m (57.1 ft); therefore, the ZID surrounding each leg of the Aguadilla RWWTP diffuser is a rectangle of 146.4 m (480.0 ft) long and 44 m (144.4 ft) wide. The conservative CID of 151:1 used by EPA to assess compliance with WQS is achieved within the mixing zone.

A surfacing plume "boil" achieves a greater dilution than does a trapped plume. EPA uses worst case conditions to be conservative. Thus, in the case of the Aguadilla RWWTP the CID of 151:1, which is based on the 10 percentile current speed and a trapped plume, is a conservative estimate of the dilution that is achieved in the marine waters of Aguadilla.

Most of the time, when conditions are better than worst case conditions, such as higher current speeds and no stratification, the effluent plume will quickly travel further vertically and horizontally and achieve greater initial dilutions. This was demonstrated during the 1998 OSV ANDERSON Survey, during which the National Ocean and Atmospheric Administration (NOAA) conducted a dilution survey which measured in-the-field initial dilutions in the vicinity of the Carolina RWWTP discharge. The in-the-field dilutions measured by NOAA ranged from 260:1 to 300:1. These dilutions were measured at a depth of 13.5 ft (4.5 m) below the surface, using towed instruments. The measured dilution was greater than the worst case CID of 123:1 calculated and used to assess compliance by EPA. In addition, since the Carolina RWWTP discharge plume was observed on the surface as a boil during the ANDERSON Survey and the initial dilution of 260:1 to 300:1 was measured at a depth of 13.5 ft (4.5 m) below the surface, the actual initial dilution of the surfacing plume would have been much greater than 260:1 to 300:1.

**The knowledge
obtained during the 1998 OSV ANDERSON Survey in the vicinity of the Carolina RWWTP is applicable to the Aguadilla RWWTP.**

Thus, when the effluent plume of the Aguadilla RWWTP surfaces in a boil, it achieves a greater dilution than the EPA calculated CID of 151:1.

40. Comment: "Marine currents will move the sewerage discharges closer to our beaches."

40. EPA Response: All available oceanographic data reviewed by EPA indicates that the dominant current patterns in the vicinity of the Aguadilla RWWTP discharge are not towards shore. The Aguadilla RWWTP discharges into the Atlantic Ocean, an embayment on the northwest corner of the West Coast of Puerto Rico. The prevailing winds are from east-northeast to east-southeast sector throughout the year, with the strongest winds blowing from the east to northeast.

The current data provided in the Aguadilla 301(h) application were based on the following current surveys: three surveys in early 1970s; April/May 1985 survey; June/July 1985; January/February 1987 survey and measurements obtained in October 1999 by using an Acoustic Doppler Current profiler (ADCP).

The currents in this part of the Atlantic Ocean are influenced by the larger current systems in the adjacent ocean, particularly by the North Equatorial Current. Local winds do not significantly affect the currents in the Bay. An interaction between the North Equatorial Current and the current in Pasaje la Mona results in changes in the current directions and strength in the Atlantic Ocean. The available current data indicates that currents along the shore flow predominantly from southwest at speeds of 3- 25 cm/sec during the winter, and less frequently from the northeast at speeds of 3-12 cm/sec during the summer.

Recent studies as documented by the ADCP data collected near the Aguadilla outfall during the Aguadilla four quarterly deployments (PRASA, 1999c, 2000a and c, 2001a) indicate that tidal and wind-driven currents predominate in the coastal waters surrounding the Aguadilla RWWTP discharge. The predominant flow pattern was a tidal reversing flow. These records document that effluent discharged through the Aguadilla outfall is rapidly dispersed and transported away from the diffuser. The overall current drift indicates a predominant current that runs parallel to the shoreline (northeast and southwest). The combined four quarters of data indicate that the direction of the currents predominates in two sectors: 021 to 080^0T and 201 to 260^0T, a predominant shore-parallel current pattern. The onshore and off shore directed currents tend to be transient conditions occurring when the predominant current direction is shifting between the two shore-parallel directions.

41. Comment: "Humans and animals that use the water face serious health risks from the short and shallow primary waste water discharge tubes used in Puerto Rico...."

41. EPA Response: The data submitted by PRASA indicates that there are no coral reefs in the vicinity of the Aguadilla RWWTP outfall. The data also demonstrate that all 301(h) requirements, including compliance with PRWQS, are met and that, as stated above, the applicant has demonstrated that the discharge from the Aguadilla RWWTP will assure the protection and propagation of a BIP of fish, shellfish and wildlife.

As explained in response # 31, based on the DMR data and the total and fecal coliform data presented in ten Quarterly Monitoring Reports (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c), since January 2000 (except total coliform in February 2001) there have been no violations of the Aguadilla RWWTP effluent limits of 2,000 col/100 mL and 10,000 col/100 mL of fecal and total coliform, respectively. Therefore, EPA has determined that the Aguadilla RWWTP will not impact the biota, including coral communities, or pose a risk to human health.

42. Comment: The commenter states that EPA reports already conclude that 19 % of our beaches are threatened by pollution and another 8 % do not comply" "The Environmental Magazine" "ranked the coastline of Puerto Rico as the one of the most polluted".

42. EPA Response. Since this comment was submitted in response to EPA's decision to approve the Aguadilla RWWTP 301(h) waiver from secondary treatment, EPA will focus its response on the above comments only as they apply to its 301(h) decision for the Aguadilla RWWTP.

The Aguadilla discharge is located over 750m (2,450 ft) from shore and just east of Punta Boqueron; therefore, the waters immediately adjacent to the Aguadilla diffuser are Class SC. The Commonwealth WQS define Class SC waters as those "Coastal waters intended for uses where the human body may come in indirect contact with the water (such as fishing, boating, etc.), and for use in propagation and maintenance of desirable species." This water classification is part of the Commonwealth Water Quality Standard Regulations which have been subject to public review and approved by EPA.

It is EPA's determination that PRASA has successfully demonstrated, through its ambient 301(h) monitoring surveys, that the Aguadilla RWWTP meets all 301(h) requirements including its effluent limits and ambient PRWQS for pathogens, and thus, is not impacting the beaches in the vicinity of the discharge (see response # 31 for details).

43. Comment:"Puerto Rico and especially Rincon have thriving tourism industry whose mainstay are beautiful beaches and coastal waters. The polluting of these beaches will be a serious blow to the economy, as tourists will seek cleaner beaches and waters elsewhere."

43. EPA Response: EPA concludes that the Aguadilla RWWTP discharge does not pollute the local beaches (see response # 31 and 42 for details).

44. Comment: Puerto Rico should "Stop spending money to avoid environmental issues. Put

the money towards the compliance of the "CWA" of 1972..." and upgrade all primary treatment plants to secondary treatment. This would "improve the environmental quality of our beaches and ocean water."

44. EPA Response: Section 301(h) of the CWA allows EPA to waive secondary treatment requirements for WWTPs that discharge to the ocean, have submitted timely 301(h) applications and meet all nine 301(h) requirements. The Government of Puerto Rico has chosen to pursue a Section 301(h) waiver from secondary treatment for its Aguadilla RWWTP and has demonstrated, to EPA's satisfaction, that the advanced primary treatment proposed for the Aguadilla RWWTP meet all nine 301(h) requirements as implemented by regulations contained in 40 CFR Part 125, Subpart G, including compliance with all applicable Commonwealth WQS and EPA marine criteria, which assure the protection and propagation of a BIP of fish, shellfish and wildlife, and the protection of human health in the receiving waters of the Aguadilla RWWTP ocean outfall. Therefore, the Government of Puerto Rico's Aguadilla RWWTP primary effluent meets the requirements of the CWA. EPA has no authority to require that an ocean discharge meeting the requirements of law and regulation be eliminated in favor of a secondary discharge.

45. Comment: The Aguadilla RWWTP discharge affects recreational activities in the Aguadilla Bay. PRASA is failing to comply with the CWA requirements of attainment and maintenance of clean waters that would guarantee the protection of waters and water sources.

45. EPA Response: As explained in detail in the response to comment 32, EPA has determined that the Aguadilla RWWTP discharge is in compliance with its effluent limits and all applicable requirements of the Commonwealth WQS for Class SC waters. EPA does not expect the Aguadilla RWWTP effluent to impact Class SB waters, including those beaches designated by PREQB as suitable for primary contact. EPA will remain vigilant to ensure that full compliance is being maintained.

40 CFR §125.62(d)(2) requires that all applicable Commonwealth water quality standards be met beyond the zone of initial dilution and that no 301(h)-specific restrictions on recreational activities, such as closed swimming or fishing areas, be implemented because of the discharge from the Aguadilla RWWTP.

The Aguadilla RWWTP 301(h) modified NPDES permit includes provisions for a mixing zone for some pollutants and effluent limits for other pollutants which are established at levels sufficient to prevent the exeedences of WQS in the receiving water. The effluent limits for total and fecal coliform are established at the PREQB WQS applicable to Class SC waters or 10,000 colonies/100 mL, total coliform, and 2,000 colonies/mL, fecal coliform. Since January 2000, the Aguadilla RWWTP has complied with its effluent criteria for total (except for February 2001) and fecal coliform. In addition, the levels of total (220 - 650 colonies/100 mL), fecal (5 - 80 colonies/100 mL) and enterococci (10 colonies/100 mL) observed in the effluent 'boil' during PRASA's 4th and 7th Quarterly Monitoring events

(PRASA, 2001a & d) were below the PREQB's WQS values for these parameters in Class SC and Class SB waters.

EPA has determined that the Aguadilla RWWTP discharge complies with all applicable requirements of the Commonwealth water quality standards and that no restrictions on recreational activities have been imposed specific to the Aguadilla RWWTP, which limits recreational activities beyond those identified for Class SC waters and that the effluent from the Aguadilla RWWTP does not impact Class SB waters. Therefore, EPA has determined that the Aguadilla RWWTP meets the requirements of 40 CFR §125.62(d)(2).

46. Comment: One NGO whose members include residents of the municipalities of Aguada and Aguadilla who use beaches and coastal waters for recreational purposes, including walking, jogging, swimming, and surfing and who use coastal waters for fishing. indicated that their members have been affected by the discharges from the PRASA Regional Wastewater Plant in Aguadilla from a) foul smells in the ocean, b) floating solids that result in a public health risk, and c) reduced enjoyment of the coastal resources relating to the concerns about pollution.

46. EPA Response: It is EPA's determination that the Aguadilla RWWTP advanced primary treated effluent meets all the criteria under Section 301(h) of the Act, as implemented by regulations contained in 40 CFR Part 125, Subpart G, including compliance with all PREQB WQS for toxic pollutants, floatables and pathogen for Class SC waters.

a) Odor: EPA understands that a well operated and maintained wastewater treatment plant, either primary or secondary with mostly domestic influent, should not cause odor problems in the surrounding neighborhoods. EPA has incorporated into the proposed permit a Preventive Maintenance Program (PMP) that must be implemented by the permittee. The PMP not only addresses odor from the Aguadilla RWWTP, but also from the sewer lines as well. EPA will evaluate DMR data and will continue to inspect the facility and related appurtenances to determine compliance with permit conditions, including the implementation of the PMP and will take appropriate enforcement actions if violations are detected.

b) Public Health: i) Floatables: EPA acknowledges that the Aguadilla RWWTP has not been in continuous compliance with effluent limitations since it began operations and may not have been in compliance with its oil and grease NPDES limit at the time of the commenters observations. The Aguadilla RWWTP 301(h) modified NPDES Permit includes effluent limits for oil and grease of 10 mg/L monthly average and 15 mg/L daily maximum. Since January, 1999, with the exception of January 2000 when the monthly average of oil and grease in the Aguadilla RWWTP effluent was 10.4 mg/L, the Aguadilla RWWTP has been in consistent compliance with the above mentioned 301(h) modified NPDES effluent limits for oil and grease. With respect to ambient levels of oil and grease, with only one exception in approximately 72 samples (460 mg/L collected at background station A7 during the PRASA's Second Quarterly Monitoring event) ambient levels of oil

and grease were not detected at any ambient monitoring station, including the ZID and boil stations, at levels above the detection limits of 5.0 mg/L and 6.5 mg/L.

ii) Pathogens: DMR data and data submitted by PRASA in its ten Quarterly Monitoring Reports (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c) indicate that since January 2000 (except total coliform exceedence in February 2001) the Aguadilla RWWTP has continuously met its total and fecal coliform effluent limits (see response # 31 for details). Therefore, it is EPA's determination that the Aguadilla RWWTP effluent does not cause nor contribute to an exceedence of pathogen standards in the vicinity of the discharge, and that the Aguadilla RWWTP effluent is protective of human health.

c) The waters of the Atlantic Ocean, from Punta Boqueron to Punta Borinquen, are classified SC. This classification applies from the zone subject to the ebb and flow of tides (mean sea level) to 19.1 km (10.3 mi) seaward. The waters from Punta Boqueron to Punta Algarobbo in Mayaguez and from Punta Borinquen to Punta Maracayo, located in Aguadilla are classified SB waters, from the zone subject to the ebb and flow of tides (mean sea level) to 500 m (1,640 ft) seaward. The waters located beyond this zone, to a maximum distance of 19.1 km offshore (10.3 mi) are classified SC. The Aguadilla diffuser is located over 500 m from shore and just east of Punta Boqueron, therefore, the waters immediately adjacent to the Aguadilla diffuser are Class SC. These Class SC waters support secondary contact recreation such as fishing and boating.

The Aguadilla RWWTP is being operated at an advanced primary level, which PRASA has demonstrated is sufficient to meet all nine criteria in Section 301(h), as implemented by regulations contained in 40 CFR Part 125, Subpart G, including compliance with all applicable NPDES permit limits and all WQS applicable to Class SC waters, assuring the protection and propagation of a BIP of fish, shellfish and wildlife, and protection of human health in accordance with PREQB's Class SC use classification for the waters in the vicinity of the Aguadilla RWWTP ocean outfall.

47. Comment: a) PRASA submitted four mixing zone applications one each in 1985, 1987, 1993 and 1999, "...in a vain attempt to produce an 'approvable' application."; b) "In these mixing zone studies, the plant and diffuser designs and locations remained unchanged. Instead, PRASA submitted additional receiving water quality sampling or modified the effluent flow volume and number of ports that would remain open in the diffuser."; c) these mixing zone applications "...constitute an attempt to comply with WQS with dilution rather than increased treatment."; d) "Only three pollutants are encompassed by a section 301(h) waiver from primary treatment: biochemical oxygen demand (BOD), total suspended solids (TSS) and pH. 33 USCA §1311(H). For all other pollutants identified in the plant's discharge, an alternate compliance mechanism must be sought. The most common compliance mechanism utilized is a mixing zone."; e) a mixing zone is a three-dimensional space in the water column within which a point source may exceed WQS; f) a high rate diffuser may achieve high levels of dilution (in this case 151:1), so that by the time the effluent plume reaches the edge of the mixing zone, pollutant levels would be equal to or lower than the applicable WQS; g) the use of a mixing zone

constitutes an attempt to achieve compliance with WQS at the discharge point through dilution, rather than by providing additional treatment at the Aguada RWWTP; h) PRASA would gain nothing if it was not granted a mixing zone "for all regulated pollutants" and that, if the mixing zone did not provide sufficient dilution to allow compliance with WQS for "all regulated pollutants" at the edge of the mixing zone, then PRASA would be obligated to provide additional treatment, thereby defeating its attempt to be exempted from secondary treatment requirements.

47. EPA Response: a) EPA concurs with the statement that PRASA has submitted four applications to obtain PREQB's mixing zone approval for its Aguadilla RWWTP discharge. In its, January 31, 2000 WQC, PREQB approved PRASA's May, 1999 mixing zone application.

b) EPA concurs with the commenters' statements regarding the design of the diffuser and its ports, but adds that EPA, based on an existing effluent analysis, has proposed a reduction in the BOD limit from the AO-based limit of 144 mg/L to the 301(h) modified NPDES permit limit of 106 mg/L and since June 1999, has provided advanced primary treatment by use of chemical addition to increase solids removal at the Aguadilla RWWTP.

c) PRASA's mixing zone applications were developed and submitted in accordance with Article 5 of PREQB's 1990 WQS Regulations. Article 5 allows the PREQB to establish mixing zones in marine waters. A mixing zone is an area within which WQS may be exceeded. However, all WQS must be met at the edge of the mixing zone. Mixing zones are small three dimensional areas surrounding the diffuser. Within this area, the initial dilution of 151:1 occurs and all pollutants must meet WQS at the edge of this mixing zone.

d) Section 301(h) of the CWA allows EPA to waive the secondary treatment limits of 85% removal of BOD and TSS provided the applicant can meet all the requirements of Section 301(h) including the primary floor. The primary floor is defined as a minimum of 30% removal of BOD and TSS. Section 301(h) does not include provisions allowing the waiver of state pH standards. All other pollutants discharged by a 301(h) applicant must meet the applicable Commonwealth WQS and EPA marine criteria. Since the PREQB WQS include provisions for mixing zones, PREQB may approve a mixing zone.

e) EPA concurs with this comment.

f) EPA concurs with this comment.

g) EPA's WQS Regulations allow the States/Commonwealth to establish mixing zones. State/Commonwealth mixing zones must meet federal regulations/guidance and must be included in the State/Commonwealth's WQS Regulations. The Puerto Rico mixing zone regulations were approved by EPA on February 3, 1988. Thus a mixing zone is a legal method of establishing compliance with WQS and not as the commenters state "...an attempt to achieve compliance with WQS at the discharge point through dilution, rather than by providing additional treatment..."

h) A mixing zone is not granted on an "all or nothing" basis as the commenters' statement suggests. A mixing zone is granted on a pollutant by pollutant basis. The following is a very simplified example of the pollutant by pollutant mixing zone approach: if a mixing zone application were submitted for six pollutants, one of which exceeds WQS at the edge of the mixing zone, PREQB might approve a mixing zone for the five pollutants that meet WQS and disapprove the mixing zone for the one pollutant that exceeds WQS at the edge of the mixing zone. PREQB might then propose a NPDES effluent limit that would assure that the discharge of the one pollutant would not cause or contribute to a violation of the applicable ambient WQS. The applicant may be given a schedule to bring the one pollutant into compliance with the permit limit.

The effluent which is freshwater will, under most conditions, rise quickly to the surface, be entrained into the surface waters, and, because of the relatively high current speeds in the vicinity of the diffuser, be transported away from the site. Following the initial dilution, the waste field will be transported out of the area, by the net drift currents. The waste field will, in general, be transported towards the southwest or west at a speed of 10 - 30 cm/sec. The lateral spreading of the waste field in the horizontal direction will rapidly increase far field dilution as the distance traveled from the discharge site increases.

The data obtained for the Aguadilla RWWTP 301(h) Waiver Demonstration Studies support the above. As a result EPA does not believe that re-entrainment of polluted waters within the mixing zone is taking place. The 301(h) Review Team concludes that the design and location of the Aguadilla RWWTP diffuser is sufficient to provide a quick and high CID of 151:1, rapid far field dilution and fast transport away from Aguadilla Bay.

48. Comment: a) WQS certainly exist, either directly or indirectly, for all of the traditional pollutants for which PRASA has requested relaxation: dissolved oxygen (BOD), turbidity (TSS) and pH. However, the WQS for turbidity, and those for fecal and total coliform bacteria (and occasionally some toxicants) are certainly and frequently violated in the immediate receiving waters, which are heavily influenced by the Culebrinas River. That river and its discharge zone in Bahia de Aguadilla and the Atlantic Ocean are significantly degraded by nonpoint source pollution from the watershed (as made very evident from examination of recent aerial photography [submitted as part of our colleague's comments], and as collaborated by commonwealth reports [PRASA, 1987; 1999 and 2000]). The degradation is exacerbated by the subject discharge and by spills and overflows from the sewage collection system for the Aguada plant. The Decision Document (US EPA, August 10. 1999) inaccurately characterizes and minimizes the existing water quality problems in the immediate receiving system citing only one violation of the PR ambient turbidity standard, and making the remarkable claim that the violation is in response to resuspension of bottom sediments. To the extent that bottom sediments contribute to a violation of ambient WQS, those sediments arise from the Culebrinas River watershed. Direct evidence of this is scattered throughout the record examples include: PRASA, 1987 II-C 1.39 ["high level of siltation which prevails in the area due to the Culebrinas River influence"] and II-C2.10 ["Total suspended solids were as high as 1,800 mg/I in August 1984."]).

b) A fair and accurate characterization of receiving water quality must occur before EPA can consider options allowable under the circumstances. We believe that such an analysis would demonstrate that not only are large portions of the Bahia de Aguadilla not meeting WQS, but that part of these waters should be considered for listing as impaired (and then for remediation) under CWA Sections 303(d) and 305(b). We ask EPA to show cause why these waters should not be listed as impaired. They are certainly "stressed" in the sense of 40 CFR 125.62(f).

c) In addition, we believe that the high-degree of riverine influence (apparent from aerial photographs examined by us, as well as water quality, sediment and invertebrate data) creates estuarine conditions in large portions of the Bahia de Aguadilla. In fact, the influence of the Culebrinas River is undoubtedly the single dominant ecological factor in the immediate discharge zone. The area clearly suffers from periodically reduced salinity, and significant riverine inputs of sediment and other pollutants. We submit that even fulfilling the criteria under section 301(h) does not release the subject facility from meeting WQS and other applicable federal laws and regulations required to be met under Section 301(b)(l)(c).

d) Specifically, the discharge of excessive nitrogen and/or phosphorus into nutrient sensitive coastal waters threatens ecological processes in coral reef and related ecosystems at a variety of scales. While threats to WQS for nutrients and/or surrogate standards for plant pigments (e.g. chlorophyll *a* might be able to be maintained with large-scale dilution of wastewater, the commenter adamantly maintains that excessive loading of nutrients into these systems generally threatens the ecological integrity of the system. Specific effects of nutrient over enrichment of tropical marine ecosystems include the induction of excessive growth of phytoplankton, the alteration of phytoplankton community structure, the induction of excessive growth and/or alteration of epibenthic algal communities, and the ecological cascades they induce. Alteration of benthic algal distribution patterns may well have serious implications for invertebrate distribution and abundance patterns, settlement success of fish and invertebrate larvae, and a host of other effects. In addition, direct competition for space among sessile forms like corals, sponges and other live-bottom organisms is a major problem known to be associated with nutrient over enrichment in these systems.

e) Excessive nutrient delivery into shallow-water soft-sediment marine habitats may directly threaten the extent, production and ecological value as nursery grounds and habitats of vascular plant beds, including seagrasses (National Research Council, 1993; National Academy of Science, 2000). While the extent of seagrass beds in the zone of influence is clearly affected by wave energy and by sediment pollution from the Culebrinas River, there is nonetheless seagrass habitat in the area (that is, appropriate depth and appropriate substrate type). More careful mapping is needed for seagrasses and potential seagrass habitat.

f) Prolonged and excessive turbidity and other standard violations may well interfere with critical larval development processes that occur at both the air-water interface and the sediment-water interface. Together, these changes threaten the value of this designated essential fish habitat and associated HAPCs.

g) Not only is primary treatment inappropriate for WWTPs in close conjunction to coral reef and related hard-bottom systems, so is secondary treatment. Full protection of the uses of these waters for the propagation of fish and invertebrates, as required by federal water quality regulations, and protection of essential fish habitat, requires at least tertiary treatment to remove nutrients. Non-discharge options should be given careful consideration. The recent report of the National Academy of Sciences on nutrient impacts in coastal waters specified removal of both nitrogen and phosphorus for tropical coastal systems (NAS, 2000). The anti-degradation policy requires that existing uses be maintained, whether or not waters are classified to protect such uses (40 CFR 125). The growth and maintenance of coral reef ecosystems, the production of fish are existing uses of these water bodies that are not fully protected by the current WQS. In any event, protection must be fully achieved before any waiver is considered.

48. EPA Response: a) EPA notes that the Aguadilla Bay is receiving a high level of suspended solids (SS) and total and fecal coliform from the Culebrinas River. The aerial photographs (NOAA 1999, 2001) clearly show that the Culebrinas River plume extends out into Aguadilla Bay. Data obtained from two water-quality stations located on Culebrinas River (USGS, 1999 and 2000) documents high river flows (up to 229 MGD) with high turbidity (up to 340 NTU) and significant levels of total and fecal coliform (up to 40,000 col/100 mL) being discharged to Aguadilla Bay. During high flow, the Culebrinas River is a major source of turbidity and total and fecal to Aguadilla Bay.

EPA is aware that during heavy rain events the flow and level of turbidity in the effluent of Aguadilla RWWTP increases due to inflow and infiltration. For that reason, EPA issued an Administrative Order (CWA-02-99-3100) requiring PRASA to do an infiltration/inflow (I/I) study for Aguadilla RWWTP sanitary sewer system. It is believed that once the study is completed and the necessary repairs are made the I/I problem and resulting increased turbidity will be minimized.

The Aguadilla RWWTP 301(h) modified NPDES permit has a turbidity effluent limit of 84 NTUs. DMR data and data submitted by PRASA in its ten Quarterly Monitoring Reports (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c) indicated that since January 2000 (except for exceedence of effluent limits for turbidity in April 2000, May 2001 and June 2002) the Aguadilla RWWTP has consistently complied with its effluent limitations. It should be noted that all effluent limit exceedences of turbidity occurred during heavy rains and PRASA is currently doing I/I studies in order to minimize rain caused contributions to the Aguadilla collection system. PRASA continues work to minimize I/I and bring the Aguadilla RWWTP into full compliance with its effluent limit for turbidity.

A total of 212 ambient turbidity samples was taken at three depths at seven stations during the two-year monitoring. A total of five or 2.4% of the samples were observed to be above the 10 NTUs standard outside the mixing zone (one at A1 (EMZ) station and two each at stations A2 (EMZ) and A3 (farfield)). All exceedence were from near bottom measurements (90% depth). Both surface and mid-water turbidity samples at all stations were below the criteria. Based on the plant's effluent and receiving water data, EPA

believes that it is likely that this observed exceedence may be due to natural resuspension of bottom sediments or resuspension of the bottom sediments by the sampling device and is not due to the Aguadilla RWWTP's discharge.

b) This is not the venue for comment on impaired water listing under Sections 305(b) or 303(d) of the CWA. In September 2002, PREQB public noticed and held a public hearing on its 2002 303(d) list. The commenter had the opportunity, during the September public comment period, provide, to PREQB, their opinion regarding the condition of the waters of Aguadilla Bay.

c) EPA concurs. The freshwater influence of the Culebrinas River is a "...dominant ecological factor..." in the ecology of Aguadilla Bay. However, any influence the Culebrinas River may have on the salinity of Aguadilla Bay is natural and not man induced. Therefore any salinity-based influence the Culebrinas River may have on the biota of Aguadilla Bay is also natural and not man induced.

EPA concurs. The Aguadilla RWWTP must meet WQS and other applicable federal laws and regulations required under Section 301(b)(l)(C). In fact the Aguadilla RWWTP 301(h) modified NPDES permit include effluent limits, as necessary, to assure that the Aguadilla discharge does not exceed or contribute to the exceedence of any applicable WQS. The permit also requires conditions such as monitoring and reporting requirements which are necessary to comply with Federal Regulations.

d) Puerto Rico is one of the few States to have a numeric WQS for nutrients (nitrogen) in coastal waters. The current PREQB numeric WQS for total nitrogen is 5 mg/L. Based on the results of ten PRASA's Aguadilla 301(h) Waiver Quarterly Monitoring Reports dating from 1999 - 2002, PREQB's marine criterion for nutrients, which is expressed as 5 mg/L of nitrogen, has been met at all ambient water quality stations and in the Aguadilla RWWTP effluent, after allowing for a CID of 151:1 (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c).

EPA believes that chlorophyll *a* data is an appropriate method of assessing nutrient impact on the phytoplankton community. EPA had determined that chlorophyll *a* concentrations in the vicinity of the Aguadilla RWWTP discharge are consistent with non-bloom conditions observed in the Caribbean and indicate the Aguadilla RWWTP has not adversely impacted the local the plankton community.

Ambient concentrations of chlorophyll *a* will continue to be monitored as specified in the Aguadilla RWWTP 301(h) Post Waiver Monitoring Program which is included the 301(h) modified permit issued by EPA with this action. This data will allow the Region 2 301(h) Review Team to continue to assess the impact of the Aguadilla RWWTP on the local phytoplankton community over the life of the permit.

The Aguadilla RWWTP is currently meeting EQB's nutrient criteria for total nitrogen of 5 mg/L and, as discussed in the Aguadilla RWWTP 301(h) Decision Document (EPA 2000b),

there are no well developed coral reefs in the vicinity of the Aguadilla discharge.

Please note, as part of its National Nutrient Strategy, EPA has published seventeen Eco-Regional Nutrient Criteria Documents for lakes and reservoirs, rivers and streams and wetlands within specific geographic regions (eco-regions) of the United States. These recommended section 304(a) water quality criteria for nutrients were developed with the aim of reducing and preventing eutrophication on a National scale. Each document presents recommended criteria for causal parameters (total phosphorus and total nitrogen) and response variables (chlorophyll a and some form of turbidity). This information is intended to serve as a starting point for States, authorized Tribes and others to develop more refined nutrient criteria, as appropriate, using EPA waterbody-specific technical guidance manuals and other scientifically defensible approaches. EPA will work with States and authorized Tribes as they adopt numeric criteria for nutrients into their WQS. EPA intends to publish its "Nutrient Criteria Technical Guidance Manual: Estuarine and Coastal Marine Waters" in the near future.

While EPA recognizes that the National nutrient criteria development efforts to date have not focused on tropical waters and the protection of coral reefs, under the National Nutrient Strategy EPA continues to make annual grants available to all States and Territories for use in nutrient monitoring and criteria development activities. The combination of the availability of these funds and upcoming publication of the "Nutrient Criteria Technical Guidance Manual: Estuarine and Coastal Marine Waters," will enable tropical States and Territories to initiate efforts to collect the necessary information for nutrient criteria development in these tropical regions. Coral reef protection would be a major element of such efforts. Puerto Rico, which is included in the CWA's definition of a "State" has expressed interest in receiving these funds and working with local Universities to begin the development of such nutrient criteria.

e) The Aguadilla RWWTP is currently meeting EQB's nutrient criteria for total nitrogen of 5 mg/L, and, as discussed in the Aguadilla RWWTP 301(h) Decision Document (EPA 2000b), there are no well developed coral reefs nor seagrass beds in the vicinity of the Aguadilla discharge. However, a sparse but healthy and diverse coral communities exist in the vicinity of the discharge. Therefore, EPA has determined that the Aguadilla advance treated primary effluent will not contribute to or cause adverse impact to the distinctive habitats in the vicinity of the discharge.

f) EPA has reviewed the extensive chemical, physical and biological data collected in the vicinity of the Aguadilla RWWTP from 1985, 1987, and 1999 to 2002 indicates that the Aguadilla RWWTP discharge supports the protection and propagation of a BIP of fish, shellfish and wildlife in its receiving water (EPA, 2000a). EPA successfully completed the EFH consultation. In a letter dated December 13, 2001, the National Marine Fisheries Service found that the Aguadilla RWWTP would not impact EFH.

g) EPA has no authority to require that an ocean discharge meeting all the requirements

of Section 301(h) of the CWA, and regulation, 40 CFR Part 125, be eliminated in favor of waste management options, including non-discharge opportunities and tertiary treatment. The Government of Puerto Rico seeks approval of a 301(h) waiver for the ocean discharge of advanced primary effluent, and since the discharge meets all nine criteria of Section 301(h), EPA is approving the waiver.

49. Comment: a) Disagree with EPA's finding that no significant additional restrictions are likely to result from waiver issuance. The discharge is located right in the middle of a seriously degraded river plume, which should be considered for listing and remediation under CWA Sections 303(d) and 305(b). b) Issuance of the subject waiver will clearly make compliance with WQS here much harder, and more costly to nonpoint sources in the watershed. c) In addition, that reliance on primary treatment would undoubtedly limit the utility of the WWTP to any future industry, and result in significant additional burdens on such industries. d) Significant non-point source problems in the watershed are certainly exacerbated by failures within the existing sewage collection and treatment system. Failure to address this problem now will guarantee much more draconian measures in the future.

49. EPA Response: a) EPA does not agree that "significant additional restrictions are likely to result from waiver issuance." 40 CFR l25.64 requires that the applicant's proposed discharge must not result in any additional treatment requirements on any other point or nonpoint sources. Additional treatment means, treatment above and beyond what is required by the law to achieve compliance with standards associated with the parameters (BOD and TSS) subject to the 301(h) waiver. For example, a 301(h) waiver may not be issued if issuing the waiver for one POTW will force a second POTW to increase its treatment level beyond secondary treatment to assure the shared receiving waters meet the water quality standards (dissolved oxygen and turbidity) associated with the discharge of BOD and TSS. This requirement does not pertain to adjacent waters, such as the Culebrinas River, where loading of BOD, TSS and other parameters must be reduced so that the Culebrinas River meets water quality standards and does not impact the 301(h) receiving waters.

The required Commonwealth of PREQB positive determinations required by 40 CFR 125.64(b) were issued on July 26, 1989. These determinations certify that the proposed discharge will not result in any additional treatment, pollution control, or other additional requirements to any other point or nonpoint sources. PRASA submitted to PREQB a package containing its 1993 Mixing Zone Application, 1995 Mixing Zone Validation Study and 1999 Application for a Water Quality Certificate and Definition of Mixing Zone for Aguadilla RWWTP. PREQB has reviewed the information submitted by PRASA and on January 31, 2000 issued a new Water Quality Certificate for the Aguadilla RWWTP. Based on the above information, EPA finds that the proposed Aguadilla advanced primary discharge will not impact other point or nonpoint sources, and therefore, no significant additional restrictions are likely to result from waiver issuance for the Aguadilla RWWTP.

b) EPA's review of PREQB's draft 2002 303(d) list indicates that two segments of the

Culebrinas River are listed as impaired for turbidity, pathogens, and metals (Ar, Cu, Pb, Hg, and Mg). In addition to the two impaired segments, 22.3 miles of the Culebrinas River were listed in Category 3, which indicates insufficient data to determine impairment. The sources of pollution include municipal point sources, collection system failures, land disposal and onsite wastewater systems. EPA will continue to work with PREQB in developing and implementing Clean Water Act programs to improve the water quality in the Culebrinas River. The approval of the Aguadilla 301(h) waiver will have no impact on these programs.

c) EPA disagrees with this comment. 40 CFR125.65(d) requires that POTWs with population of 50,000 or more, the applicant must develop and enforce local limits to remove pollutants that would be removed if the POTW were to apply secondary treatment. The 301(h) waiver requirements consider that the local limits evaluation is complete when the technically defensible local limits have been implemented. Implementation means that the limits are adopted and incorporated into industrial user permits. For a full discussion and explanation of this issue see EPA's public noticed Aguadilla RWWTP Decision Document entitled "Analysis of the Section 301(h) Secondary Treatment Waiver Application for the Aguadilla Wastewater Treatment Plant NPDES NO. PR 0023736 Puerto Rico."

d) EPA agrees that failures in the sewage collection system may cause sewage overflows which affect both aquatic life and human health. Of the pump stations tributary to the Aguadilla RWWTP, only the Moca Pump Station can discharge raw sewage directly into the Culebrinas River. EPA notes that, in the past, there have been problems with the Moca Main Pump Station which has caused raw sewage overflowing to the Culebrinas River. However, since June 1999, PRASA indicates that no bypasses of raw sewage have occurred at the Moca Main Pump Station.

EPA is committed to eliminating sewage overflows, and has been taking enforcement actions to compel compliance. PRASA has upgraded operation, maintenance and monitoring at the Aguadilla RWWTP and its tributary pump stations. It is very important that all sewage overflows, and illegal dumping of solid waste be reported to EPA immediately so EPA can properly investigate and take actions to correct such problems. The EPA contact for reporting such incidents is Mr. Jaime A. Geliga, and he may be reached at (787) 977-5840.

50. Comment: Some commenters disagree with EPA's determination that the issuance of the waiver will not result in the increase in pollution loads or flows. The region's population is increasing fairly rapidly, and new construction is rampant in and near the service area. The intent is specifically to increase the flow volume to 16 MGD from 8 MGD. We believe that waiver issuance would result in enhanced delivery of pollution loads and volumes into sensitive waters with detrimental effects. Certainly nutrient loads would increase through time, with serious potential consequences. b) In addition, the issuance of the waiver will actively facilitate further coastal development that will result in increased pollution loading (including the same materials

for which the relaxation of secondary standards are requested). The proposed waiver clearly fails this test. c) The existing studies cannot predict what the impact would be of increasing the existing discharge to that included in the permit.

50. EPA Response: a) The proposed Aguadilla 301(h) permit contains a monthly average flow of 8 MGD, not the 16 MGD as indicated by the commenter. However, it allows the applicant to discharge at a daily maximum of 16 MGD. The existing and the proposed Aguadilla 301(h) permit contain the same monthly average flow of 8 MGD. Concentrations of BOD are reduced further in the proposed permit. Although, the new Aguadilla permit allows the applicant to discharge at a daily maximum of 16 MGD, the average monthly loadings for TSS and BOD remain the same or less as in the existing permit.

Under 40 CFR 125.67, which implements Section 301(h)(8), the applicant's proposed modified discharge may not increase above the amount specified in the 301(h) modified NPDES permit.

PRASA has requested the following average discharge volume and mass loadings:

Existing and Applicant Requested 301(h) Aguadilla Discharge Limits

Parameter	Existing Limits	301(h) Proposed Limits
Flow, MGD (Monthly Average)	8	8 [a]
BOD_5 Loadings, kg/day	none	3,213.07 [a]
TSS Loadings, kg/day	none	2,121.84 [a]

a = Based on PRASA's Aguadilla NPDES Permit Renewal Application, March 1999.

b) EPA does not see a relationship between its approval of the Aguadilla RWWTP 301(h) waiver and stimulation of coastal development or an impact to the long term economic productivity of the region.

c) As explained in detail, in EPA's Aguadilla Decision Document entitled "Analysis of the Section 301(h) Secondary Treatment Waiver Application for the Aguadilla Wastewater Treatment Plant NPDES NO. PR0023736 Puerto Rico", the above proposed effluent volume and mass loadings will result in the compliance with all applicable federal and Commonwealth WQS and 301(h) criteria.

51. Comment: a) The NPDES biomonitoring compliance report of September '99, which was not used for the waiver, used data on toxicity from '88, '93, and '98. Through these studies, conducted in the United States in EPA laboratories, it was determined that the toxicity level of the discharge was acute, that the mortality rate of the two organisms monitored was of 65 and 100 percent within 48 hours after exposure to the discharge. Of course, when the Environmental

Quality Board comes, and sees those numbers, adding them, subtracting them, multiplying them, they get a number that must come out to be equal to .3, the number comes out .3 or less, and I still do not understand how they get that number, well, then they are in compliance. The toxicity of the discharge is acute, as confirmed by the EPA report. They even mention that the concentrations of chlorine and ammonium were very high in both samples, and the EPA recommends that the Aguada plant determine the extent and variability of the toxicity and that it determine how to evaluate the chlorine and ammonium in the toxicity of the effluent.

b) The effects of the discharge on other general and specific source, the synergistic effects of the discharge were not taken into account. For example, six pesticides were detected at levels beyond the legal limits. Of these six, four are banned by the EPA and have been so for a long time. These exceedences have been blamed on the river. However, the possible synergistic effects that these pesticides could have on the plant discharge is not being studied.

51. EPA Response: a) Toxicity testing was performed in accordance with methods outlined in the EPA manuals, Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms (EPA, 1985) and Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Marine and Estuarine Organisms (EPA, 1987).

The PRWQS include the numeric toxicity criteria for acute toxicity of 0.3 toxic units (TU_a), and for chronic toxicity of 1.0 TU_c. In order to determine compliance with the whole-effluent toxicity (WET) criteria, acute and chronic toxicity tests must be conducted utilizing three species: the red macroalga (*Champia parvula*), the mysid shrimp (*Mysidopsis bahia*), and either the inland silversides (*Menidia beryllina*) or sheepshead minnow (*Cyprinidon variegatus*). Depending on the effect observed, acute toxicity test results are expressed as the lethal concentration killing 50% of the organisms (LC_{50}) or as the effect concentration causing a specific effect in 50% of the organisms (EC_{50}). They are designed to assess the severe toxicity at an LC_{50} or 50% mortality level. Chronic toxicity test results are generally expressed as a No Observed Effect Concentration (NOEC) and are designed to assess impacts at the sub-lethal level such as reduced reproduction and growth. The most sensitive acute (LC_{50} or EC_{50}) and chronic (NOEC) endpoints are converted to acute (TU_a) and chronic (TU_c) by taking the reciprocal of the most sensitive end point and multiplying it by 100:

Acute Toxic Units: $TU_a = 1/(LC_{50} \text{ or } EC_{50}) \times 100$

Chronic Toxic Units: $TU_c = 1/NOEC \times 100$

The acute and chronic TU after CID are compared to PREQB's 1988 WET criteria of 0.3 TU_a (Criterion Maximum Concentration or CMC) and 1.0 TU_c (Criterion Continuous Concentration or CCC).

As part of the 1999 Aguadilla NPDES application (PRASA,1999b) and the 1999 Mixing

Zone Study (PRASA, 1999a), the applicant presented 1988, 1993, and 1998 toxicity tests results. The most sensitive end points of both acute and chronic toxicity data were observed on *Champia parvula* in the 1988 toxicity tests. The results indicated that *Champia parvula* was the most sensitive species, with an acute toxicity, LC_{50}, of 7.1 percent effluent and chronic toxicity, NOEC, of 5.0 percent effluent. After allowing for a CID of 151:1, the acute and chronic toxic units after dilution are 0.1 TU_a and 0.13 TU_c both of which are below PREQB's acute and chronic toxicity criteria of 0.3 TU_a and 1.0 TU_c .

In addition, in 1999 EPA performed acute toxicity tests using Mysids at the Aguadilla RWWTP. After CID, the acute TU were calculated to be 0.01 (regardless of the concentration of ammonia contained in the whole effluent tested) which is less than and thus is in compliance with the whole-effluent acute toxic unit criteria of 0.3 TU_a. Therefore, the Aguadilla RWWTP discharge complies with the WET acute and chronic toxic unit criteria.

WET tests assess the toxicity of all components, including ammonia, of a discharge. Since the WET test results indicated that PREQB's toxic criteria are met, the Aguadilla RWWTP effluent is not toxic. Therefore, ammonia levels in the Aguadilla RWWTP effluent are not toxic.

The Aguadilla RWWTP permit requires disinfection of the effluent, prior to discharge. PRASA currently uses chlorination for disinfection. WET tests were conducted with plant's effluent collected prior to chlorination. The purpose of a WET test was to evaluate the toxicity of the effluent and not the toxicity of chlorine. In order to prevent chlorine toxicity in the ambient, the Aguadilla RWWTP 301(h) modified NPDES permit includes a residual chlorine limit of 0.5 mg/L.

b) Based on ten Quarterly Monitoring Reports (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c), of the pesticides analyzed in the Aguadilla RWWTP effluent only two pesticides (chlorpyrifos and coumaphos) were found in elevated levels. Both pesticides, however, comply with WQS at the edge of the mixing zone, after applying the CID of 151:1. As explained above, the WET test assesses toxicity of all substances (as a mixture), including all pesticides, in the effluent. Therefore, these WET tests address the "synergistic effects of these pesticides" and other substances in the Aguadilla RWWTP effluent. Since the WET test results indicated that PREQB's toxic criteria are met, the Aguadilla RWWTP effluent is not toxic. Therefore, synergistic effects of pesticides in the Aguadilla RWWTP do not cause the toxicity of the effluent.

52. Comment: The commenter states that: a) the mixing zones, the points in the mixing zone that are chosen for samples, that are derived from mathematical models, used to determine whether in those areas there is compliance with the dilution regulations, are not in the same location as the monitoring stations. I understand that when they went to sea they could have run into difficulties, because the mixing zone point might not be the best place to take samples. But then they should use the points at which they are taking samples to include in the mixing zone

model. b) The chlorophyll levels have increased significantly. You say that there will not be any bloom of the phytoplankton. Of course there will not be any; with so much toxicity, there will never be phytoplankton bloom. They are very sensitive to toxicity.

52. EPA Response: a) EPA agrees that PREQB's mixing zone coordinates, identified in its January 31, 2000 Water Quality Certificate, and included in EPA's Draft 301(h) modified NPDES permit are located slightly north and east of the actual outfall location. The final permit will include the correct mixing zone coordinates as determined by cooperative effort among PREQB, PRASA and its contractor, and EPA. The corrected coordinates are as follow:

Outfall Location	Latitude	Longitude
T1 = SW end of "Y"	18° 24.462'	067°11.336'
T2 = NE end of "Y"	18° 24.499'	067°11.246'
TY = outfall/diffuser	18° 24.444'	067°11.274'

Mixing Zone	Latitude	Longitude	Mixing Zone	Latitude	Longitude
MZ1 =	18° 24.454'	067°11.352'	MZ4 =	18° 24.514'	067°11.250'
MZ2 =	18° 24.477'	067°11.344'	MZ5 =	18° 24.503'	067°11.228'
MZ3 =	18° 24.458'	067°11.281'	MZ6 =	18° 24.430'	067°11.268'

b) EPA has reviewed the chlorophyll *a* data submitted by PRASA in its ten Quarterly Waiver Monitoring Reports (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c) and found that the ambient chlorophyll *a* concentrations in the vicinity of the Aguadilla RWWTP ranged from 0.1 to 0.66 mg/m^3. Chlorophyll *a* concentrations at the near field, within ZID, and ZID boundary stations were similar to or lower than concentrations observed at the far-field (control) stations during all of the sampling events.

Burkholder, et. al. (1972) noted that chlorophyll *a* concentrations in shallow Caribbean bays studied range from 0.05 mg/m^3 to 0.67 mg/m^3 in the absence of blooms, and from 25.0 mg/m^3 to 206.0 mg/m^3 during bloom conditions. Maximum chlorophyll *a* concentrations in temperate estuaries, embayments, and lagoons are typically in the range of 20 - 25 mg/m^3 (Boynton et al. 1982). The reported ambient chlorophyll *a* concentration ranges from 0.1 to 0.66 mg/m^3 are low and are within the natural range of chlorophyll *a* identified by Burkholder, et. al. (1972) for shallow Caribbean bays.

EPA believes that chlorophyll *a* data are appropriate for assessing nutrient impact on the phytoplankton community. Based on the above, EPA concludes that chlorophyll *a* concentrations in the vicinity of the Aguadilla RWWTP discharge are consistent with non-bloom conditions observed in the Caribbean and indicate the Aguadilla RWWTP has not adversely impacted the local the plankton community.

Ambient concentrations of chlorophyll *a* will continue to be monitored as specified in the Aguadilla RWWTP 301(h) Post Waiver Monitoring Program which is included the 301(h) modified permit issued by EPA with this action. This data will allow the Region 2 301(h)

Review Team to continue to assess the impact of the Aguadilla RWWTP on the local phytoplankton community over the life of the permit.

53. Comment: The Aguadilla RWWTP must comply water quality standards applicable to both Class SB and SC waters.

53. EPA Response: EPA agrees with the comment. While the Aguadilla RWWTP discharges into Class SC waters, EPA has assessed compliance criteria applicable to Class SB water and has determined that the Aguadilla RWWTP does not cause or contribute to exceedences of water quality standards in either Class SB or SC waters. This is explained in detail, in EPA's Aguadilla Decision Document entitled "Analysis of the Section 301(h) Secondary Treatment Waiver Application for the Aguadilla Wastewater Treatment Plant NPDES NO. PR0023736 Puerto Rico."

D. Essential Fish Habitat:

54. Comment: EPA's has not completed the required EFH consultation with the NMFS. EPA will not be able to demonstrate that the Aguadilla RWWTP meets the EFH requirements and it would be illegal for EPA to issue a final 301(h) decision for the Aguadilla RWWTP without complying with the EFH requirements.

54. EPA Response: At the time EPA public noticed the Aguadilla RWWTP proposed final 301(h) approval, EPA had not completed its Essential Fish Habitat review. EPA stated, in the Aguadilla RWWTP 301(h) draft final Decision Document that "The Region will not take final action on this 301(h) waiver until the EFH consultation has been successfully completed."

On October 19, 2001, EPA initiated an EFH consultation with the NMFS and the Caribbean Fisheries Management Council, for the Aguadilla RWWTP. The Caribbean Fisheries Management Council did not comment on EPA's EFH Assessment Report. In a letter dated December 13, 2001, the NMFS provided its concurrence with EPA's assessment of no impact to EFH. In its concurrence, NMFS has included the following EFH Conservation Recommendations, with which EPA has agreed to comply:

> **"1. Final action on the proposed 301(h) waivers for the Aguadilla, Arecibo, Bayamon/Puerto Nuevo, and Carolina facilities shall require implementation of all monitoring requirements, effluent limitations, and permit special conditions identified by EPA in the draft permits and provided to the NMFS with the EFH Assessment.**
>
> **2. Any consideration of revision to the quarterly biological monitoring permit requirement shall be coordinated with the NMFS to allow an evaluation of the implications of such a revision and an opportunity to supplement these EFH Conservation Recommendations.**

3. Any future consideration of reducing the number of water quality monitoring parameters shall be coordinated with the NMFS to allow an evaluation of the implications of such a reduction and an opportunity to supplement these EFH Conservation Recommendations.

4. Sediment quality monitoring, to include sediment texture, total organic carbon, priority pollutants, and pesticides, shall be completed at least once during the first year of the permit period. Annual sediment quality monitoring shall be conducted in subsequent years if first year sampling documents levels of priority pollutants and pesticides which significantly exceed background level.

5. EFH consultation with the NMFS shall be reinitiated if permit monitoring requirements, effluent limitations, or permit special conditions are proposed for modification during the 5-year permit authorization period. In addition, if the PRASA applies for a renewal NPDES permit with effluent limits reflecting a continuation of the 301(h) waiver, EFH consultation will be conducted as part of EPA's review of any such permit renewal application. EPA will initiate and complete EFH consultation prior to making a final decision to renew a 301(h) modified permit."

EPA has successfully complied with the requirements of EFH and has completed the required EFH consultation with the NMFS, for the Aguadilla RWWTP 301(h) Waiver.

55. Comment: The Aguadilla "coastal waters are graced with beautiful coral reefs, which are considered essential fish habitat, that are now dying from the tons of sediment and waste discharged into this bay."

55. EPA Response: The Aguadilla RWWTP began operation in March 1986. In 1979, prior to the start-up of the Aguadilla RWWTP, Goenaga and Cintron (1979) described the coral development in the general area of the Aguadilla and indicated that there were no well developed coral reefs located in the vicinity of the Aguadilla RWWTP discharge but that scattered healthy and diverse coral communities existed within 1.8 km of the discharge. The Aguadilla Quarterly monitoring data indicate that these scattered coral communities have not been impacted by the Aguadilla RWWTP discharge.

EPA agrees that coral reefs as well as the coral communities present in Aguadilla Bay are essential fish habitat and EPA successfully completed the Essential Fish Habitat (EFH) consultation with NMFS. In a letter dated December 13, 2001, the NMFS found that the Aguadilla RWWTP would not impact EFH.

56. Comment: a) Primary treatment is simply inadequate for the Aguadilla WWTP facility. A large-scale ocean discharge at this site should only be possible if non-discharge options are shown to be impossible, and if a more complex system of smaller on-site systems is proven infeasible. b) Such a large-scale discharge is patently ineligible for a primary waiver, and would

absolutely require at least tertiary treatment with advanced nutrient removal in order to protect EFH and human health.

56. EPA Response: a) The Government of Puerto Rico has pursued a 301(h) waiver for the ocean discharge of advanced primary effluent, for its Aguadilla RWWTP. As explained in detail in EPA's Aguadilla Decision Document entitled "Analysis of the Section 301(h) Secondary Treatment Waiver Application for the Aguadilla Regional Wastewater Treatment Plant", the Aguadilla RWWTP is being operated at an advanced primary level, which PRASA has demonstrated is sufficient to meet all nine criteria in Section 301(h), as implemented by regulations contained in 40 CFR Part 125, Subpart G including compliance with all applicable NPDES requirements and all WQS applicable to Class SC in order to assure the protection and propagation of a BIP of fish, shellfish and wildlife and human health, in the vicinity of the Aguadilla RWWTP ocean outfall.

b) EPA has no authority to require that an ocean discharge meeting all the requirements of Section 301(h) of the CWA, and regulation, 40 CFR Part 125, be eliminated in favor of "waste management options, including non-discharge opportunities and tertiary treatment" The Government of Puerto Rico seeks approval of a 301(h) waiver for the ocean discharge of advanced primary effluent, and since the discharge meets all nine criteria of Section 301(h) including the protection of a BIP and human health, EPA is approving the Aguadilla RWWTP 301(h) waiver from the requirements of secondary treatment.

E Endangered Species Act:

57. Comment: Endangered Species such as whales, manatees, marine turtles and the gray pelican may develop diseases associated with the Aguadilla RWWTP advanced primary effluent

57. EPA Response: EPA has received a letter dated March 28, 1989, from the NMFS and a letter dated July 10, 1989 from the U.S. Fish and Wild Life Service, stating that no federally-listed endangered species under their jurisdiction are likely to be affected by the Aguadilla RWWTP primary discharge.

58. Comment: The following comment was submitted by Fundacion Surfrider of Puerto Rico:

> "The intention of the EPA it even consider a waiver of the of the CWA for the purpose of permitting the government of Puerto Rico to continue and increase dumping the practically untreated waste waters into our coasts for the next 20 years constitutes in our eyes, a continuation of a shameless racist conspiracy to violate the people of Puerto Rico s civil & human rights proving that the EPA considers us "spicks" and a not much valued colony to be dispensed with at a whim."

58. EPA Response: The Government of Puerto Rico chose to pursue its rights under the CWA to apply for a 301(h) waiver from secondary treatment for the Aguadilla RWWTP. EPA is responsible to assure the requirements of the CWA, including section 301(h), are properly implemented.

It is EPA's determination, after review of all pertinent information, that the Aguadilla RWWTP meet all nine 301(h) requirements as implemented by regulations contained in 40 CFR Part 125, Subpart G (59 Fed. Reg. 40642, August 9, 1994), including compliance with all applicable Commonwealth WQS and EPA marine criteria, which assure the protection and propagation of a BIP of fish, shellfish and wildlife, and the protection of human health in the receiving waters of the Aguadilla RWWTP ocean outfall.

In addition, as part of the permit issuance process, EPA prepared and public noticed an "Environmental Justice Analysis" review of its approval of the Aguadilla RWWTP 301(h) application. The purpose of the Environmental Justice Review was to ensure that EPA's decision to approve the Aguadilla RWWTP did not impose disproportionately high and adverse human health or environmental effects on the community, and to ensure that the Agency ensures fair treatment and meaningful involvement of the affected community in carrying out the Agency's and the Region's programs, policies and activities. Fair treatment and meaningful involvement should not be understood to mean preferential treatment for certain communities. Rather, these principles should be understood to mean the Agency and Region will continue to provide equal protection and access to information to all communities we serve. Even though the community of concern is a Low Income Community, EPA Region 2 has determined that it is not an Environmental Justice Community because it does not have a disproportionate and adverse Environmental Burden, and EPA's decision to approve the Aguadilla RWWTP 301(h) waiver will not impose a disproportionately high and adverse human health or environmental effects on the community . EPA will continue to inspect the facility and related appurtenances to evaluate its performance and will take necessary enforcement actions to ensure that there are no adverse effects to human health and/or the environment.

59. Comment: Commercial fishing has been directly affected by the plant's discharge, because for the last 100 years there have been no new effluents in that bay, other than that which comes from the treatment plant. In other words, the only new addition to the Aguadilla Bay has been that treatment plant and the effect on commercial fishing operations must be due to it, because there are no other possibilities.

59. EPA Response: EPA has determined that the Aguadilla RWWTP discharge will not impact local or pelagic fish. EPA's determination was the basis for its Essential Fish Habitat (EFH) consultation with the NMFS. Prior to finalizing its decision to approve the Aguadilla RWWTP 301(h) waiver, EPA completed the required EFH consultation with the NMFS. The EFH review assesses the impact of the Aguadilla RWWTP on fish population and habitat. On October 19, 2001, EPA initiated an EFH consultation with the NMFS which provided the Caribbean Fisheries Management Council with an opportunity to comment. In a letter dated December 13, 2001, the NMFS provided its concurrence with EPA's assessment that EPA's approval of the Aguadilla RWWTP 301(h) waiver from secondary treatment would not cause impact to EFH in the vicinity of the Aguadilla RWWTP. In its concurrence, NMFS included a number of EFH Conservation Recommendations, with which EPA has agreed to comply.

60. Comment: EPA has determined that a high percentage of the community is below poverty level income. Why doesn't EPA enforce its Environmental Justice requirements?

60. EPA Response: The evaluation of income data within the community of concern has revealed that a higher percentage of the population in the community of concern than of the population Island-wide is below poverty level. For this reason the community of concern is considered to be a Low Income Community. However, in evaluating Environmental Burden, EPA reviewed the reports of facilities in the Toxic Release Inventory (TRI), Resource Conservation and Recovery Information System (RCRIS) and Comprehensive Environmental Response, Compensation and Liability Act Information System (CERCLIS) databases, comparing the number of facilities in the municipality of Aguada with the average number of facilities by municipality Island-wide.

	Facilities in Puerto Rico	Average Number of Facilities by Municipality (Reference Community)	Facilities in the Municipality of Aguada (Community of Concern)
TRI	337	4	6
RCRIS	3267	42	23
CERCLIS	386	5	2

Based upon the analysis, EPA does not believe that there is a disproportional environmental burden on the municipality of Aguada. Furthermore, the ocean discharge from the Aguadilla RWWTP will comply with the PRWQS and all the 301(h) program requirements. Therefore, EPA concludes that the discharge will be protective of human health and the environment. Even though the community of concern is a Low Income Community, EPA Region 2 has determined that it is not an Environmental Justice Community because it does not have a disproportionate and adverse Environmental Burden. EPA will continue to inspect the facility and related appurtenances to evaluate its performance and will take necessary enforcement actions to ensure that there are no adverse effects to human health and/or the environment.

61. Comment: a) Even though EPA determined that the community of concern was a low income community, it determined that the community of concern is not an environmental justice community because it does not have a disproportional and adverse environmental burden. What is the community of concern? The EPA has determined that the community of concern is an area in a radius of one a half miles of the treatment plant. Why isn't the community of concern the entire island of Puerto Rico since waivers are being sought by PRASA for the Arecibo, Bayamon, Carolina, Ponce and Puerto Nuevo facilities. The outfalls of all these facilities will have an impact on the entire area and not only to the one and a half miles radius around the Aguadilla plant. b) The community of concern should also include the marine life, which was

not represented at the hearing.

61. EPA Response: a) In implementing its Environmental Justice (EJ) Program, EPA Region 2 intends to respond to community concerns and to be able to identify communities where EJ concerns may arise to ensure that our core program activities are resulting in equitable treatment.

To determine if there is an environmental burden on the community of concern, EPA evaluated data from TRI, RCRIS and CERCLIS. Although the community of concern has been defined as the community within the 1½ mile radius from the Aguadilla RWWTP, the data available from the TRI, RCRIS and CERCLIS is organized by municipality; therefore, the data for the Municipality of Aguada was used for this analysis as an approximation of the specific data for the area of concern. EPA believes that by using the data for the Municipality of Aguada instead of the data on the community of concern (information not available) the analysis is more conservative, since it will take into consideration facilities that are not within the area of concern.

b) The Environmental Justice Program does not apply to the marine biological community in the vicinity of the Aguadilla RWWTP discharge. However, as part of the 301(h) review, EPA has concluded that a Balanced Indigenous Population is protected.

F. Urban Area Pre-Treatment Program

62. Comment: Several Commenters state that PRASA has failed to demonstrate timely compliance with urban area pretreatment requirements. Under 40 CFR § 125.59(f)(3)(ii)(A), the applicant's plan to comply with urban area pretreatment program requirements in 40 CFR § 125.65 should have been submitted no later than August 9, 1996, two years after the effective date of EPA's 1994 rule. EPA has stated that this two-year limit is mandatory and that it "will grant in no case more than two years to achieve compliance." 56 FR 2814 (Jan. 24, 1991). One requirement of the urban area pretreatment program is that the applicant have local limits in effect. 40 §CFR 125. 65(b)(1)(i) and (c). EPA admits in the 2000 Decision Document (pp. 44-46) that PRASA did not submit a technical evaluation of its local limits until March 25, 1998 and did not incorporate them into industrial pretreatment permits until August 31, 1998. This was two years beyond the two-year time limit. Another requirement is that the applicant "shall demonstrate that industrial sources introducing waste into the applicant's treatment works are in compliance with all applicable pretreatment requirements, including numerical standards set by local limits, and that it will enforce those requirements." 40 §CFR 125. 65(b) (1) (1). EPA states in the 2000 Decision Document (pp. 46-47) that compliance means at least 85% compliance, and that this standard was achieved in September 1999. This was three years beyond the two-year time limit. EPA's practice of evaluating compliance with these requirements as of the time that the waiver is approved would allow unlimited extensions of time and is inconsistent with its own regulations.

62. EPA Response: The commenter is correct in stating that the deadline contained in

40CFR §125.59(f)(3)(ii)(A) for an applicant to submit its urban area pretreatment plan is August 9, 1996. PRASA's industrial pretreatment program (IPP), developed in accordance with 40 CFR Part 403, was approved by EPA on September 26, 1985 and was amended in May 1995 to include an enforcement response plan. The IPP contains most of the necessary pretreatment requirements to comply with 40 CFR 125.60 and 125.65; however, it contains island-wide limits for its CIUs and SIUs. PRASA is required to provide to EPA a technical analysis of the need to revise local limits periodically. EPA determined that PRASA needed to do such an analysis on a plant-by-plant basis and to determine what plant specific limits might be necessary.

In its November 7, 1994 letter, PRASA selected the Applicable Urban Pretreatment Requirement Approach to comply with 40 CFR §125.65 and indicated that the implementation of the local limits would follow the schedule as set forth in the Consent Order of September 29, 1994, which was issued against PRASA for its deficiency in the implementation of PRASA's IPP.

The proposed schedule for the completion of local limits for the Aguadilla RWWTP was November 30, 1996, which was later than the August 9, 1996 deadline set forth in 40 CFR §125.59(f)(3)(ii)(A). Although the proposed compliance date for the Aguadilla RWWTP was beyond the August 9, 1996 regulatory deadline, EPA in its February 27, 1995 letter to PRASA indicated that it would not take any actions to disapprove the plan or deny PRASA's applications for 301(h) modification for these facilities based solely on this deficiency so long as PRASA was meeting the terms of the September 29, 1994 Consent Order.

PRASA submitted the pretreatment/local limits report for Aguadilla in May 29, 1996. However, EPA's initial assessment indicated that the report was not complete. EPA worked with PRASA toward the submission of a technical evaluation containing appropriate local limits, which were approved on May 8, 1998.

EPA exercised its discretion to allow PRASA the necessary time to develop plant-specific local limits. EPA is not required by the regulation to deny an applicant's waiver request for failure to comply with one of the dates, see 40 CFR §125.59(e)(2): "If the applicant does not meet these schedules for compliance, EPA <u>may</u> deny the application on that basis." (Emphasis added) Given PRASA's good faith attempt to comply by submitting its technical evaluation of local limits for Aguadilla on May 29, 1996 and its continuing cooperation with EPA after that date to perfect its evaluation, EPA exercised its discretion and chose not to deny the application for this missed deadline.

With regard to the comment that Aguadilla achieved a compliance rate of at least 85% in September, 1999, the time period noted in the 2000 Decision Document came from the latest report with the most up-to-date compliance status at the time. Aguadilla has, in fact, been meeting this requirement since at least September 1, 1998. September 1, 1998 was the date EPA began specifically documenting PRASA's compliance status with the 301(h)

pretreatment requirements. For the time period prior to September 1, 1998, industrial user compliance in Aguadilla, in general, was not significantly different from that after September 1998 as is shown in information contained in PRASA's periodic pretreatment reports.

63. Comment: PRASA states that the Aguadilla RWWTP draft permit (Section C: "Pretreatment Program," subsection 4: "Pretreatment Report") establishes a semi-annual schedule for submitting Pretreatment Reports. EPA should clarify that this paragraph supersedes the previous quarterly schedule established in EPA's Section 308 letter.

63. EPA Response: The pretreatment report referenced in the draft permit is a requirement of the pretreatment program that applies to all POTWs with approved pretreatment programs. This requirement includes a report on all major components of the pretreatment program and will be in effect throughout the term of the permit. The quarterly report on SIU compliance in accordance with the 308 letter, dated January 19, 2000, is a separate requirement to determine whether PRASA is meeting the criteria of running an adequate pretreatment program as a part of the 301(h) requirements. The reporting requirement in the 308 letter will end when the 301(h) final decision is made and reflected in an effective NPDES permit. However, EPA has asked PRASA to continue submitting quarterly SIU compliance reports, even after the issuance of the final 301(h) modified NPDES permit.

64. Comment: One commenter states that PRASA indicates that they have a very good pretreatment program in place, that was approved in '95 island-wide. However, in '97 the EPA issued an Administrative Order because they still did not include the industry or discharge inventories from the plant. Now, it would seem, in this last year they were able to work wonders.

64 EPA Response: The Administrative Order issued in September 1997 was for PRASA's failing to timely develop technically-based local limits the Aguadilla plant. Part of the local limit development is to evaluate all of the industrial discharges in the area. PRASA complied with the Order requirements by establishing technical local limits in March 1998. EPA reviewed and approved these limits.

G. Stressed Waters

65. Comment: The waters of Aguadilla Bay in the vicinity of the Aguadilla RWWTP are stressed and EPA has not done a stressed water demonstration. Some of the factors contributing to the stressed condition of these waters and the absence of a BIP are: the plume of the Culebrinas River, suspended and settleable solids, water quality impairments for toxics and pathogens, and because the waters do not support primary contact recreation.

65. EPA Response: Under the Section 301(h) regulation stressed waters and the need for an applicant to do a stressed water demonstration are very narrowly defined. 40 CFR

125.62(f) and 40 CFR 125.58(z) state:

> **"(f) *Stressed waters*. An applicant must demonstrate compliance with paragraphs (a) through (e) of this section not only on the basis of the applicant's own modified discharge, but also taking into account the applicant's modified discharge in combination with pollutants from other sources. However, if an applicant which discharges into ocean waters believes that its failure to meet the requirements of paragraphs (a) through (e) of this section is entirely attributably to conditions resulting from human perturbations other than its modified discharge (including, without limitation, other municipal or industrial discharges, nonpoint source runoff, and the applicant's previous discharge), the applicant need not demonstrate compliance with those requirements if it demonstrates, to the satisfaction of the Administrator, that its modified discharge does not or will not:**
>
> **(1) Contribute to, increase, or perpetuate such stress conditions;**
> **(2) Contribute to further degradation of the biota or water quality if the level of human perturbation from other sources increased: and**
> **(3) Retard the recovery of the biota or water quality if the level of human perturbation from other sources decreases." and**
>
> **"*Stressed waters* means those ocean waters for which an applicant can demonstrate to the satisfaction of the Administrator, that the absence of a balanced indigenous population is caused solely by human perturbations other than the applicant's modified discharge."**

As per 40 CFR 125.62(f), a stressed waters demonstration is only initiated by the applicant if it determines it can not comply with 40 CFR 125.62(a)-(e). Since PRASA believed it did comply with 40 CFR 125.62(a)-(e) PRASA did not submit a stressed waters demonstration.

As explained in detail in EPA's Aguadilla Decision Document entitled "Analysis of the Section 301(h) Secondary Treatment Waiver Application for the Aguadilla Regional Wastewater Treatment Plant", the Aguadilla RWWTP is being operated at an advanced primary level, which PRASA has demonstrated is sufficient to meet all nine criteria in Section 301(h), as implemented by regulations contained in 40 CFR Part 125, Subpart G, including compliance with all applicable NPDES permit limits and all WQS applicable to Class SC and 40 CFR 125.62(a)-(e), assuring the protection and propagation of a BIP of fish, shellfish and wildlife, in the vicinity of the Aguadilla RWWTP ocean outfall.

EPA has, in the appropriate section of this Responsiveness Summary and in its document entitled "Analysis of the Section 301(h) Secondary Treatment Waiver Application for the Aguadilla Regional Wastewater Treatment Plant" provided a detailed evaluation and responses to comments concerning compliance with 40 CFR 125.62 (a) compliance with water quality standards for toxics, such as cyanide, and conventional, such as total and fecal coliform, compliance with waterbody classification; (b) the impact on public water supplies; (c) attainment or maintenance and the propagation of a balanced indigenous population of fish shellfish and wild life; (d) impact or restrictions on recreational activities; and (e) compliance with any additional requirements based on an improved or altered outfall.

66. Comment: The waters of Aguadilla Bay are stressed and all seven 301(h) monitoring

stations are located in water stressed by the impacts due to both the Aguadilla RWWTP and the Culebrinas River. Since EPA relies on a comparative approach to demonstrate the presence of a BIP and all the monitoring stations are stressed by the effluent and sediment loading from the Aguadilla RWWTP and the Culebrinas River there are no unstressed stations to use as reference stations. Therefore, EPA can not demonstrate the presence of a BIP.

66. EPA Response: The commenter makes the assumption that because a monitoring station may be within the plume of the WWTP or of a local river that the monitoring station must be considered impacted or stressed.

As explained in detail in EPA response to comment 37, in accordance with 40 CFR §125.58(z), stressed waters means "those ocean waters for which an applicant can demonstrate to the satisfaction of the Administrator, that the absence of a balanced indigenous population is caused solely by human perturbations other that the applicant's modified discharge." The extensive chemical, physical and biological data collected in the vicinity of the Aguadilla RWWTP from 1985, 1987, and 1999 to 2002 indicates that the waters of Aguadilla Bay support a balanced indigenous population of fish, shellfish and wildlife (PRASA, 1985, 1987, 1999c, 2000a and c, 2001a-d, 2002a-c, EPA, 2000a). Therefore, in accordance with the 301(h) regulation, EPA does not consider waters in the vicinity of the Aguadilla RWWTP discharge to be stressed waters.

It is EPA's determination that PRASA has demonstrated that the advanced primary treated effluent being discharged by its Aguadilla RWWTP is sufficient to meet all nine criteria in Section 301(h), as implemented by regulations contained in 40 CFR Part 125, Subpart G, including compliance with all applicable NPDES permit limits and all WQS applicable to Class SC and 40 CFR 125.62(a)-(e), assuring the protection and propagation of a BIP of fish, shellfish and wildlife, in the vicinity of the Aguadilla RWWTP ocean outfall.

H - Permit Limits and Conditions

67. Comment: PRASA states that Table I - Technology-Based Effluent Limitations Note 2 requires that PRASA, "continue the use of flow proportional chemical addition to enhance solids sedimentation." That is, it requires PRASA to implement advanced primary treatment (APT) through the use of chemical polymer addition. This requirement is unnecessary for the Aguadilla RWWTP to achieve all of the 301 (h) criteria and would impose an unwarranted economic burden. The Aguadilla RWWTP had consistently achieved compliance with its permit limits, due in large part to the major operational, maintenance and capital improvements PRASA/CAPR has implemented. Given the additional cost associated with the use of APT programs and the limited benefit, PRASA should be allowed to determine the optimum treatment technology available for use in its own facilities. Therefore, the requirement for APT should not be included in the permit for the Aguadilla RWWTP.

67. EPA Response: As agreed in the August 10, 2000 "Memorandum of Agreement to

Voluntarily to Achieve Secondary Treatment between the Government of Puerto Rico and the U.S. EPA Region 2", PRASA commits to continue providing advanced primary treatment through the use of chemical addition, in order to minimize the loadings of TSS and other pollutants pending the upgrade to full secondary treatment. Therefore, the APT requirement contained in Table I - Technology-Based Effluent Limitations Note 2 will remain in the Aguadilla 301(h) modified NPDES permit. In addition, EPA understands that the need for polymer addition to ensure compliance with the SS removal is necessary, once the flows being treated at the plant increase with new connections in the area. Currently the facility is treating approximately 4 MGD of sewage, but when the facility reaches it's design capacity, polymer addition would ensure that compliance would be maintained.

68. Comment: PRASA objects to the inclusion of a numerical limit for residual chlorine in the draft permit. PRASA states that this is an arbitrary limit imposed by EQB in the final WQC and that the PRWQS Regulation does not contain a numerical limitation for residual chlorine. PRASA stated that EQB has consistently failed to provide data or any calculations on how it derived the numerical limitation from its narrative water quality standard.

68. EPA Response: The effluent limitation in the proposed permit for Residual Chlorine is based on the final WQC issued by EQB. EPA must incorporate in the final permit the requirements specified in a WQC. Section 301(b)(1)(C) of the CWA requires that there be achieved effluent limitations necessary to assure that a discharge will meet WQS of the applicable State and Federal laws and regulations where those effluent limitations are more stringent than the technology-based effluent limitations required by Section 301(b)(1)(A) of the CWA. Section 401(a)(1) of the CWA requires that the State certify that the discharge will comply with the applicable provisions of sections 301, 302, 303, 306 and 307 of the CWA. Pursuant to Section 401(d) of the CWA any certification shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal permit will comply with all applicable effluent limitations and other limitations under section 301 or 302 of the CWA, and with any other appropriate requirement of State law set forth in such certification. Also, 40 C.F.R 122.44(d) requires that each NPDES permit shall include requirements which conform to the conditions of a State Certification under Section 401 of the CWA that meets the requirements of 40 CFR 124.53. Similarly, 40 CFR 124.55 requires that no final NPDES permit shall be issued unless the final permit incorporates the requirements specified in the certification under §124.53. Concerning the certification requirements in 40 CFR 124.53(e)(1), they specify that all Section 401(a)(1) State certifications must contain conditions which are necessary to assure compliance with the applicable provisions of CWA sections 208(e), 301, 302, 303, 306, and 307 and with appropriate requirements of State law.

On February 9, 2000, EQB issued a final WQC for the facility certifying that pursuant to Section 401(a)(1) of the CWA, after due consideration of the applicable provisions established under Sections 208(e), 301, 302, 303, 304(e), 306 and 307 of the CWA

concerning water quality requirements, there is reasonable assurance that the discharge will not cause violations to the applicable WQS, provided that the effluent limitations set forth in the WQC are met by the facility.

69. Comment: PRASA strongly opposes EPA's proposed end-of-pipe limits for undissociated sulfide (H_2S). PRASA states that EPA proposes an end-of-pipe (EOP) effluent limit for undissociated sulfide (H_2S; 2 ug/L), which is the Puerto Rico Water Quality Standard for this substance, in Table A-1 because of expressed concerns for sulfide concentrations in the receiving water based on the its review of the 301(h) quarterly monitoring data collected during the first two quarters of the ongoing Aguadilla 301(h) receiving water monitoring study. PRASA further states that compliance with PRWQS H_2S limit in the receiving waters at the Aguadilla RWWTP outfall could not be fully evaluated from the quarterly reports available to EPA at the time that it drafted the permit because of analytical limitations. That is, method detection levels (MDLs) for total sulfide were too high to make meaningful comparisons between calculated H_2S values and receiving water H_2S standards. Total sulfide detection limits for the first three quarters of 301(h) monitoring ranged between 1,000 ug /L and 100 ug /L total sulfide. These total sulfide detection limits equate to calculated H_2S concentrations of approximately 100 ug/L to 6 ug/L, depending on ambient seawater measurements of conductivity, pH, and temperature. The minimum calculated concentration in this range of non-detects exceeds the PRWQS of 2 pg/L H_2S. Therefore, there were no conclusive data indicating compliance with PRWQS. To better evaluate H_2S compliance with receiving water standards, a more sensitive analytical method was used for the fourth quarter 301(h) monitoring to insure adequate measurement of total sulfide. When more appropriate total sulfide MDLS (2 ug/L) were achieved, all stations were demonstrated to be in compliance with the PRWQS for H_2S. In fact, the highest measured value in the receiving waters occurred within the mixing zone and was only 45% of the standard. Based on fourth quarter 301(h) monitoring results, which present the only data with sufficiently low MDLS to make realistic comparisons, there are no violations of PRWQS. Consequently there is no reason to establish EOP limits for H_2S. PRASA will continue monitoring using the lowest detection limits to confirm continued compliance with PRWQS for H_2S. If monitoring should fail to confirm continued compliance, PRASA believes that a compliance plan (rather than an EOP limit that could never be met) would be a more appropriate way to deal with the issue.

69. EPA Response: EPA proposed end of pipe limitations for total sulfide and undissociated H_2S in the draft NPDES permit because the information available at the time of issuance indicated that WQS might be exceeded by the facility's discharge. However, the results of three ocean monitoring events that have occurred after the permit was drafted have shown that there have not being any exceedence of the WQS for these parameters. Furthermore, using EPA's "Technical Support Document For Water Quality Based Toxic Control" as guidance, a reasonable potential analysis was conducted by EPA using all data available from the mixing zone application and ocean monitoring studies. The reasonable potential analysis showed that the effluent discharged from the facility does not have the potential to violate WQS for these parameters. Therefore, consistent with its reasonable potential analysis, EPA will modify the final permit to include an end of pipe

effluent limitations of 4,700 µg/l for total sulfide, and, consistent with EQB's WQC, EPA will include a mixing zone limitation of 2 µg/l for undissociated H_2S.

70. Comment: PRASA states that none of the parameters included in Table A-1 make reference to footnotes b or to footnote c. Footnote b refers to the Special Condition No. 21 related to the Interim Limits and Compliance Plan for copper, cyanide and phenolic substances. These parameters do not appear in Table A-1. Therefore, PRASA understands that footnote b must be deleted since Tables A-4 and A-5 were included in the permit to address these parameters. In the case of footnote c, it refers to the Special Condition No. 18, which is related to the Mixing Zone requirements. Therefore, PRASA understands that the parameters that appear in Special Condition No. 18 and in Table A-1 should be identified with footnote c.

70. EPA Response: EPA concurs with PRASA's comment and will modify the final permit accordingly.

71. Comment: PRASA states that Special Condition No. 9 of Attachment #1 of the Fact Sheet indicates that EPA established a more stringent interim limit for phenolic substances than those established by EQB's WQC. The reason for EPA to establish a lower interim limit was that effluent data included in the DMR data show that the plant can comply with the "existing effluent limitation". However, DMRs for the months of January, May and June 2000 show possible violations to EPA's 95.4 ug/L interim limit (103, 216 and 98 ug/L, respectively). PRASA requests clarification and justification for why this interim limit has been modified so radically. While this RWWTP may, on average, be able to meet the lower discharge limit, there may be occasional excursions over the new proposed limit. PRASA requests that EQB's WQC interim limit (180 pg/L) be maintained. In any case, the permit limit for phenolic substances (regardless of the final number used) is an interim limitation to be applied during a compliance plan and a final limit will be worked out in accordance with this plan.

71. EPA Response: The interim limit of 95.4 ug/l for phenolic substances included in the permit was established by calculating existing effluent quality (EEQ) using values reported by PRASA in the DMRs for this facility. In order to comply with antidegradation requirements, EPA must ensure that effluent quality is sufficient to prevent the ambient water from being degraded by an increase in the discharge of phenolic substances. The EEQ-based limit of 95.4 ug/L will prevent an increase in discharge of phenolic substances and, therefore, shall remain in the permit.

72. Comment: PRASA indicates that Special Condition 5 appears to require that mercury and cyanide be non-detectable using the EPA-approved method with the lowest possible detection limit. This condition appears to conflict with some of the other conditions: specifically with Special Condition 18e, 19, and 21a and the associated effluent limitations. PRASA believes that the intent of Special Condition 5 is that the methods used have the lowest possible detection limits if the parameter is reported as non-detected. If this is the case, PRASA requests that the permit language be modified to accurately reflect this fact.

72. EPA Response: EPA concurs with PRASA's comments and has modified Special Condition #5 of the NPDES permit accordingly.

73. Comment: PRASA understands that the last paragraph of Part (a) of Special Condition No.18 should be written as follows: "The diffuser configuration is a one hundred (100) degree "Y" type, consisting of two (2) legs three hundred seventy four (374) feet long and eighteen to thirty (18-30) inches in diameter. A total of fifteen (15) ports along each leg diffuser shall be opened, the end port and one (1) port on every other riser should be open in alternative directions".

73. EPA Response: EPA concurs with PRASA's comments and has modified Special Condition #18 of the NPDES permit accordingly.

74. Comment: PRASA states that Special Condition 18c, along with diagram 1 on page 25 of the permit, specifies the location of the background station as 100 meters from Point 2 of the mixing zone. This definition is somewhat vague. PRASA suggests that confusion will be avoided by requiring that the background station be located 100 meters up-current from the edge of the mixing zone, which means that two possible locations should be identified and the actual site of monitoring should be selected at the time of sampling based on current direction. This would provide more realistic background values for the various parameters. The actual specification ("100 meters from Point 2") is also vague with respect to direction. PRASA suggests that the background/reference station be defined more to be "...100 meters up-current from either mixing zone Station 4 or mixing zone Station 2, depending upon ambient flow conditions at the time of the sampling effort." and that EPA identify proper coordinates for these two background sampling points.

74. EPA Response: EPA has identified two mixing zone background stations by Latitude and Longitude in order to clarify the definition in Special Condition 18c. Therefore, EPA will modify this condition to specify that a background station shall be located 100 meters to the southwest of point 2 of the mixing zone and the other background station shall be located 100 meters to the northeast of point 4 of the mixing zone. The exact Latitude/Longitude of these two background stations shall be:

BS#2 = is located 100 m southwest of MZ point 2 at:
Lat. N 18 ^{0} 24.472'
Lon. E 67 ^{0} 11.400'

BS#4 = is located 100 m southwest of MZ point 4 at:
Lat. N 18 ^{0} 24.538'
Lon. E 67 ^{0} 11.199'

These two background stations' coordinates are identified in the final permits.

75. Comment: PRASA states that the header of the first column of Special Condition 18 (e)

makes reference to “Initial Mixing Zone”. It should be corrected to “Interim Mixing Zone”.

75. EPA Response: EPA concurs with PRASA’s comments and has modified Special Condition #18(e) of the NPDES permit accordingly.

76. Comment: PRASA indicates that Special Condition 18h requires that sampling be initiated within 60 days after approval of a study plan by EQB. Table A-2 requires that sampling at the edge of the mixing zone start at EDP+4 months. There is a risk that these requirements will not be compatible or consistent. Additionally, Special Condition 18k requires sampling to proceed 180 days after approval of a study plan by EQB (to be submitted within 30 days after EDP). PRASA recommends converting all such deadlines to a defined time period following receipt of all necessary agency approvals.

76. EPA Response: The deadlines established for these requirements are based on the final WQC issued by EQB. Section 301(b)(1)(C) of the CWA requires that there be achieved effluent limitations necessary to assure that a discharge will meet the WQS of the applicable State and Federal laws and regulations where those effluent limitations are more stringent than the technology-based effluent limitations required by Section 301(b)(1)(A) or Section 301(b)(1)(B) of the CWA. Section 401(a)(1) of the CWA requires that the State certify that the discharge will comply with the applicable provisions of sections 301, 302, 303, 306 and 307 of the CWA. Pursuant to Section 401(d) of the CWA any certification shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal permit will comply with any applicable effluent limitations and other limitations under section 301 or 302 of the CWA, and with any other appropriate requirement of State law set forth in such certification. Also, 40 CFR 124.53 indicates that EPA may not issue a permit until a State Certification is issued or waived, and 40 CFR 122.44(d) requires that each NPDES permit shall include requirements which conform to the conditions of a State Certification issued in accordance with Section 401 of the CWA. 40 CFR 124.55 requires that no final NPDES permit shall be issued unless the final permit incorporates the requirements specified in the certification under §124.53. The certification requirements in 40 CFR 124.53(e)(1) specify that all Section 401(a)(1) State certifications must contain conditions which are necessary to assure compliance with the applicable provisions of CWA sections 208(e), 301, 302, 303, 306, and 307 and with appropriate requirements of State law. Therefore, since the deadlines established for these requirements are contained in EQB’s WQC, these deadlines will be incorporated into the final permit by EPA in accordance with 40 CFR 122.44(d).

77. Comment: PRASA indicates that Special Condition 18h requires sampling of the effluent every 30 minutes on the day of receiving water sampling (starting 3 hours prior to starting receiving water sampling), with the goal of correlating an effluent sample analysis with the mixing zone sampling using the timing scheme described. Clarification is needed regarding which of these effluent samples are to be chemically analyzed. PRASA proposes that if this sampling protocol is followed, one effluent sample will be analyzed corresponding to each of the four mixing zone boundary monitoring points. Selection of the applicable effluent grab will be

based on the midpoint of the times during which samples are collected for the given receiving water station (start of the 10 percent depth sample and completion of the 90 percent depth sample). PRASA requests that this issue be resolved prior to finalization of this NPDES permit.

77. EPA Response: This special condition is a mixing zone requirement of EQB's final WQC. According to EQB, PRASA shall chemically analyze the effluent sample that correlates with the mixing zone samples using the timing scheme described in the final WQC.

78. Comment: PRASA states that Special Condition 19 appears to be inconsistent with Tables A-2 and A-3 in terms of the time when sampling starts for mercury. PRASA requests clarification of EPA's expectations regarding this monitoring schedule.

78. EPA Response: EPA will clarify the language of special condition 19, which requires that sampling of mercury, as required in Tables A-2 and A-3, be initiated no later than sixty (60) days after EQB approves the modified method to analyze mercury.

79. Comment: PRASA states that, the interim limits for copper and phenolic substances should be changed to 106 and 180 ug/L, respectively.

79. EPA Response: The interim limits of 95.4 ug/l for phenolic substances and of 75.4 ug/l for copper included in the permit were established by calculating the existing effluent quality (EEQ), for both substances, using values for phenolic substances and copper reported by PRASA in the DMRs for this facility. In order to comply with antidegradation requirements, EPA must ensure that effluent quality is sufficient to prevent the ambient water from being degraded by an increase in the discharge of phenolic substances or by an increase in the discharge of copper. The EEQ-based limits of 95.4 ug/L for phenolic substances and and 75.4 ug/l for copper will prevent an increase in discharge of phenolic substances and copper and, therefore, shall remain in the permit.

80. Comment: PRASA indicates that the acronym FEP used in Special Condition 21(b) is the abbreviation of the Spanish phrase *"Fecha de Efectividad del Permiso"*. The correct acronym in English is EDP *("Effective Date of the Permit")*. Therefore, the first two sentences of this part of Special Condition No. 21 (b) must be modified accordingly.

80. EPA Response: EPA concurs with PRASA's comment and has modified Special Condition #21(b) of the NPDES permit accordingly.

81. Comment: PRASA states that Special Condition 21c requires the first quarterly progress report 30 days from EDP. The first milestone for the compliance plan is a plan of study to be submitted 60 days after EDP. PRASA suggests that a later start date for the quarterly progress reports be considered.

81. EPA Response: This special condition is a mixing zone requirement of EQB's final

WQC.

82. Comment: PRASA indicates that the final NPDES permit should not include special conditions No. 23 and No. 24 since they are covered by General Conditions C.20 and C.19, respectively, in the Attachment #1 of the permit. Based on the above, PRASA/CAPR request that these special conditions be deleted since they are redundant and may cause confusion.

82. EPA Response: Special Conditions No. 23 and 24 of the draft permit are part of the final WQC issued by the PREQB on February 9, 2000. Section 301(b)(1)(C) of the CWA requires that there be achieved effluent limitations necessary to assure that a discharge will meet the WQS of the applicable State and Federal laws and regulations where those effluent limitations are more stringent than the technology-based effluent limitations required by Section 301(b)(1)(A) or Section 301(b)(1)(B) of the CWA. Section 401(a)(1) of the CWA requires that the State certify that the discharge will comply with the applicable provisions of sections 301, 302, 303, 306 and 307 of the CWA. Pursuant to Section 401(d) of the CWA any certification shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal permit will comply with any applicable effluent limitations and other limitations under section 301 or 302 of the CWA, and with any other appropriate requirement of State law set forth in such certification. Also, 40 CFR 124.53 indicates that EPA may not issue a permit until a State Certification is issued or waived, and, 40 CFR 122.44(d) requires that each NPDES permit shall include requirements which conform to the conditions of a State Certification issued in accordance with Section 401 of the CWA. 40 CFR 124.55 requires that no final NPDES permit shall be issued unless the final permit incorporates the requirements specified in the certification under §124.53. The certification requirements in 40 CFR 124.53(e)(1) specify that all Section 401(a)(1) State certifications must contain conditions which are necessary to assure compliance with the applicable provisions of CWA sections 208(e), 301, 302, 303, 306, and 307 and with appropriate requirements of State law. Therefore, special conditions No. 23 and 24 contained in EQB's WQC, will be incorporated into the final permit by EPA in accordance with 40 CFR 122.44(d).

83. Comment: PRASA recommends that the last bullet of Section VII General Monitoring Program Requirements of Attachment # 3 (301(h) Waiver Monitoring Program) include the statement: "If the first year data set documents similarity and compliance for any of the PRWQS and EPA marine chronic criteria in the receiving water, then monitoring frequency will be reduced to one annual event for the subsequent permit year with EPA's approval." PRASA already has one year's data from Aguadilla and has requested that EPA re-evaluate the ongoing monitoring frequency on the basis of its earlier commitment to do so, which is now reiterated in Attachment # 3. Therefore, PRASA believes that a new special condition similar to the reference statement be included in the final permit to specify that the data to be evaluated to determine future sampling frequency will come from the first four quarterly sampling events already conducted at Aguadilla plus the cooperative interagency sampling methods evaluation study.

83. EPA Response: Section 301(h) of the CWA and implementing regulations require that

a Post Waiver Monitoring Program be included in all 301(h) modified permits, see also 40 CFR §125.63. The Aguadilla Post Waiver Monitoring Program may be revised during the term of the modified permit in accordance with 40 CFR §125.63(a)(2) and 40 CFR Part 122, subpart D.

As indicated in the draft 301(h) modified permit, the post waiver monitoring program may be modified "If the first year data set document similarity and compliance for any of the PRWQS and EPA marine chronic criteria in the receiving water, then monitoring frequency will be reduced to one annual sampling for the subsequent permit year with EPA's approval."

A meeting was held between EPA and PRASA on October 2, 2002, to discuss issues related to the ongoing 301(h) waiver monitoring program for PRASA's six 301(h) facilities. The objectives of the meeting were to review PRASA's compliance records for the 301(h) facilities and to propose modifications to future 301(h) monitoring frequency, intensity (number of stations and replicates per station) and methodology. On December 3, 2002, PRASA submitted additional statistical analyses of the monitoring data in support its request to modify the 301(h) waiver monitoring program.

EPA will review the information submitted by PRASA and may consider PRASA's proposal to reduce the 301(h) sampling frequency from quarterly to twice a year, once during dry and once during wet weather but is not currently assessing PRASA's request to modify the intensity or methodology of the 301(h) waiver monitoring program. Prior to any modification of the 301(h) waiver monitoring program, EPA must consult with NOAA. As part of NOAA's concurrence on EFH they requested EPA continue to require PRASA to implement the quarterly 301(h) waiver monitoring program. If, after consultation with NOAA, EPA remains in agreement with PRASA's proposal to reduce monitoring events from four to two times a year, EPA will take the steps necessary to modify the frequency of monitoring events.

84. Comment: PRASA indicates that Attachment #2 of the Draft Permit and Condition No. 14 of Attachment 1 of the Fact Sheet require the implementation of the Preventive Maintenance Program at the Aguadilla RWWTP. This requirement should be deleted. First, PRASA has implemented an extensive maintenance program and demonstrated its effectiveness through the Aguadilla facility's consistent compliance. Second, any detailed maintenance plan required by EPA would restrict PRASA's right and ability to determine the types of maintenance that are reasonable, appropriate, and necessary and would reduce its flexibility.

84. EPA Response: The Preventive Maintenance Program (PMP) requirement included as part of the NPDES permit (Attachment #2), specifies that within ninety (90) days from the EDP, the permittee shall submit to EPA for approval, a report detailing the PMP that will be implemented for the Facility. The measures contained in Attachment #2, specify the minimum requirements for the PMP. Therefore, PRASA retains flexibility to include as part of the PMP to be submitted for EPA's approval, any additional type of maintenance

deemed appropriate for each facility. Attachment #2 will remain as part of the final NPDES permit.

85. Comment: PRASA indicates that Attachment #3 appears to be a copy of a fall 1997 plan of study that clearly has been replaced by the communications and monitoring conducted since January 1998. In fact, the monitoring elements in Attachment #3 are out of date. In fact, in its current form the draft permit would require a monitoring program that is inconsistent with that which was approved by EPA and EQB, and which has been implemented over the course of the previous year. Therefore, PRASA strongly recommends that Attachment #3 be deleted, or, at a minimum, be replaced by reference to the 301(h) monitoring program QAPP/SAP that EPA approved in December 1999. As applicable, confirmation should be added to the permit that an appropriate QAPP document (either a modification to the existing document, or a new mixing zone validation QAPP) will be approved by both EPA and EQB prior to performance of mixing zone validation studies.

85. EPA Response: EPA agrees that the version of Attachment 3 that is attached to the proposed permits is not the most complete version of the 301(h) waiver monitoring program. The monitoring program currently being implemented by PRASA is the QAPP/SAP that was approved by EPA in March 2000. This QAPP/SAP contains the same basic elements as the version that was attached to the draft permit and represents a logical outgrowth of the that earlier version. The QAPP/SAP approved in March 2000 will be included in the final permit as the Aguadilla 301(h) Waiver Monitoring program in Attachment 3.

86. Comment: a) There are deficiencies in the Aguadilla Waiver Monitoring Program's phytoplankton, fish, benthic invertebrates, and coral studies. PRASA's data, including its 10 Quarterly Monitoring Reports (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c), are "... based largely on flawed monitoring program design..." and EPA's decision to approve the Aguadilla RWWTP 301(h) application is based on its "...faulty interpretation..." of PRASA's data. The Aguadilla Waiver Monitoring design flaws include:

i) inadequate siting of the reference stations - the reference stations are located in the influence of the Aguadilla RWWTP discharge plume and the plume of the Rio Culebrinas.

ii) inadequate farfield stations - the farfield stations are significantly different in character, precluding direct comparison of the data.

iii) there is an inadequate number of replicate samples per station to allow intra- or inter-station comparison.

b) EPA's decision "...fails to provide a prudent and fair characterization of the meager data that exist..." "The PRASA 1987 document and the PRASA quarterly reports all make seemingly rote findings that the results comply with the regulations, even in cases where they clearly do not. The EPA decision document (US EPA, 1999) apes those earlier reports, with no significant further analysis - even when the earlier reports are simply wrong."

c) 301(h) "...waivers from national standards should be big deals, with serious requirements for resource protection. EPA seems bound and determined to find the plant in compliance with 301(h) requirements, irrespective of the consequences. The documents simply do not honestly reflect the status of what is known about the impacts of the Aguada plant."

86. EPA Response: a) EPA disagrees. The PRASA Quarterly 301(h) Monitoring program, which PRASA has conducted 10 times in Aguadilla Bay (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c) was developed based on EPA's 301(h) regulation, guidance, was reviewed by a number of outside parties, including a number of NGOs in Puerto Rico, and was subject to an EPA quality control/quality assurance (QA/QC) program review.

EPA maintains that the Aguadilla waiver monitoring program is consistent with the goals of the Section 301(h) program, utilizes scientifically valid monitoring approaches, and provides quality data for EPA to use in its decision process.

The following outlines: 1) regulatory requirements, 2) the development of the Section 301(h) Monitoring Program, 3) the QA/QC approval process, and 4) the implementation of the Aguadilla Section 301(h) Waiver Monitoring Program:

> **1) Regulatory Requirements - Section 301(h) of the CWA and implementing regulations, 40 CFR §125.63, require that a 301(h) Waiver Monitoring Program be: (a) designed to provide data to evaluate the impact of the modified discharge on the marine biota, demonstrate compliance with applicable WQS or water criteria, as applicable, and measure toxic substances in the discharge, and (b) limited to include only those scientific investigations necessary to study the effects of the proposed discharge.**
>
> **The goals of Section 301(h) monitoring program are to:**
> - **Document short-and long-term effects of the discharge in the receiving waters, sediments, biota, and on beneficial uses of the receiving water;**
> - **Determine compliance with NPDES permit terms and conditions and state and federal water quality standards/criteria; and**
> - **Assess the effectiveness of toxic control programs.**
>
> **2) Development of the Section 301(h) Monitoring Program - The development of Aguadilla 301(h) waiver monitoring program has a long history. The generic design of the 301(h) monitoring program for municipal wastewater discharges to marine waters was originally developed in 1982 (EPA 1982) and subsequently amended in 1994 (EPA 1994). The Amended Section 301(h) Technical Support Document (EPA 1994) provides municipal dischargers with technical guidance on preparing applications for Section 301(h) modified permits and evaluating the effects of 301(h) discharges on water quality and marine biota. In addition, over the years, EPA and Tetra Tech Inc. (EPA's national contractor) developed various technical support documents addressing issues such as: locating monitoring stations (EPA 1987),**

biological indices (EPA 1985), bioaccumulation manual (EPA 1987), and toxicity tests (EPA 1987), to enhance the accuracy and validity of the waiver monitoring program. To ensure technical validity and consistency with the national approach, Region 2 asked both EPA's Office of Research and Development and Tetra Tech, Inc. for technical support in the development of the Region 2 301(h) Waiver Monitoring program.

In September 1998, using the EPA Region 2 generic waiver monitoring program, EPA in coordination with EQB and PRASA developed the Carolina 301(h) Waiver Monitoring program. Prior to the finalization of the Carolina specific 301(h) Waiver Monitoring program, interested NGOs were invited to review and to provide comments on the monitoring program. PRASA submitted a revised Carolina RWWTP specific 301(h) Waiver Monitoring Program, which included a Quality Assurance Plan to EPA for its review and approval.

3) QA/QC Approval Process - The Carolina specific 301(h) Waiver Monitoring Plan and Quality Assurance Plan was reviewed and approved by EPA in a letter dated, October 23, 1998. Using the final approved Carolina RWWTP 301(h) Waiver Monitoring program as an example, PRASA developed the Aguadilla-specific Section 301(h) Monitoring program and the Aguadilla-specific Quality Assurance Project Plan. The Aguadilla Quality Assurance Project Plan addresses the validity of sampling locations, methods, number of replicates, and analytical methods for both chemical and biological sampling. The Quality Assurance Project Plan and Sampling Analysis Protocols (QAPP/SAP) for the Aguadilla RWWTP 301(h) Waiver Demonstration studies were reviewed by EQB, PRASA, PRASA's consultant (CH2M HILL) and EPA.

The QAPP/SAP, pursuant to 40 CFR §125.63(a)(i), for Aguadilla 301(h) Monitoring Program must include the following:

(a) Description of : 1) the sampling techniques, 2) schedules and locations including appropriate control sites, 3) analytical techniques, and 4) quality control and verification procedures to be used in the monitoring program §125.63(a)(ii);

(b) Demonstrate that the permittee has the resources necessary to implement the program upon issuance of the modified permit and to carry it out for the life of the modified permit §125.63(a)(iii); and

(c) Determine the frequency and extent of the monitoring program considering the applicant's rate of discharge, quantities of toxic pollutants discharged, and the potentially significant impacts on receiving water quality, marine biota, and designed water uses §125.63(a)(iv).

Based on the review of the Aguadilla 301(h) QAPP/SAP submitted by PRASA, EPA found the sampling techniques, schedules and locations (including appropriate reference/control sites), analytical techniques, quality control and verification procedures to be used in the monitoring program pursuant to 40 CFR

§125.63(a)(ii)(iii)(iv) to be appropriate. PRASA expecting that EPA would approve its QAPP/SAP began implementing the program in 1999.

On March 13, 2000, EPA approved PRASA's QAPP/SAP for the Aguadilla RWWTP 301(h) Waiver Demonstration study, which is included as a requirement in the Aguadilla RWWTP 301(h) modified NPDES permit.

4) Implementation of the Aguadilla Section 301(h) Waiver Monitoring program - Pursuant to 40 CFR §§ l25.63 and 125.68(c), the terms of the Section 301(h) monitoring program will become enforceable conditions of the 301(h) modified permit. In order to obtain additional recent monitoring data, prior to EPA's final decision, EPA exercised its Section 308 authority and requested that PRASA immediately implement the Aguadilla 301(h) Waiver Monitoring program. Thus, since 1999 PRASA has conducted 10 Quarterly Monitoring events and submitted, to EPA, 10 Quarterly Monitoring Reports, which EPA has reviewed and used in its decision to approve the Aguadilla RWWTP 301(h) application and to respond to comments received during the public comment period.

As explained above, the Aguadilla 301(h) Monitoring program was designed in accordance with EPA regulations and guidance and the QAPP/SAP submitted by PRASA was approved by EPA on March 13, 2000. EPA has determined that: the sampling techniques, replicates, schedules and locations (including appropriate farfield, reference/control sites), analytical techniques, quality control and verification procedures used in the Aguadilla 301(h) Monitoring program, pursuant to 40 CFR §125.63(a)(i)(ii)(iii), are adequate; the EPA-approved Aguadilla Section 301(h) Waiver Monitoring program complies with 40 CFR §125.63 and §125.68(c); and, therefore, the Aguadilla 301(h) Monitoring program is adequately designed to obtain the reliable impacts of the Aguadilla RWWTP advanced primary discharge on the receiving water and biota located in the vicinity of the discharge.

b) EPA's proposed final Aguadilla 301(h) decision is based on the Region's evaluation of information contained in the following:

1) PRASA's 1987 revised Aguadilla 301(h) application (PRASA, 1987),
2) 1999 Application for A Water Quality Certificate and Definition of Mixing Zone for Aguadilla RWWTP (PRASA, 1999a),
3) 1999 Aguadilla NPDES Permit Renewal Application (PRASA, 1999b),
4) the First and Second Quarterly Reports for the Aguadilla RWWTP 301(h) Waiver Demonstration Studies (PRASA, 1999c & 2000a),
5) DMR data, PRASA's Quarterly Pretreatment Program Compliance Reports (PRASA, 2000b),
6) the Technical Review (Tetra Tech, 1987),
7) comments received from the EPA's Office of Research and Development, and
8) other available data (referenced in the decision document).

In addition, to assure that the most recent data continued to support EPA's tentative

approval, when responding to the comments received during the public notice of its proposed Aguadilla RWWTP 301(h) final decision, EPA not only reviewed the extensive chemical, physical and biological data collected in the vicinity of the Aguadilla RWWTP, from 1985, 1987, and 1999 to 2000, as mentioned above, but also reviewed eight additional quarterly monitoring reports (PRASA 2000c, 2001a-d, 2002a-c) which were submitted by PRASA after EPA made its proposed final decision.

EPA's approval of the Aguadilla RWWTP 301(h) application is based on its prudent and fair characterization of the extensive, not "meager" data that exists in support of the EPA's decision.

c) Neither the commenter or any other party has submitted data, nor has EPA found and reviewed any data that supports the commenter's statement that "The [PRASA] documents simply do not honestly reflect the status of what is known about the impact of the Aguada plant." In making this final decision, EPA reviewed all of the available information and found the data to be sufficient to demonstrate that the Aguadilla RWWTP meets all 301(h) requirements, including compliance with all applicable WQS necessary to assure protection and propagation of a BIP of fish, shellfish and wildlife, in the vicinity of the ocean outfall, as required by regulations contained in 40 CFR Part 125, Subpart G.

87. Comment: a) "...A depressed fish fauna is conceivable from the impacts of over fishing and habitat impacts of the riverine plume and discharge." EFH consultation with NMFS is required. b) The 1987 collection yielded a total of 36 fish, by trawl, at only three stations, and must simply be discarded. c) None of this demonstrates that the discharge as proposed would be fully protective of sensitive early life stages fish larvae, at or near the surface, in and near the discharge zone.

87. EPA Response: a) As discussed previously in this document, EPA has determined that the data submitted by PRASA is sufficient to demonstrate that the Aguadilla RWWTP meets all 301(h) requirements, including compliance with all applicable WQS necessary to assure protection and propagation of a BIP of fish, shellfish and wildlife, in the vicinity of the ocean outfall, as required by regulations contained in 40 CFR Part 125, Subpart G.

With respect to fishery resources in the vicinity of the Aguadilla RWWTP, EPA successfully completed the Essential Fish Habitat (EFH) consultation. In a letter dated December 13, 2001, the National Marine Fisheries Service found that the Aguadilla RWWTP would not impact EFH necessary to maintain viable fisheries in this area.

EPA will continue to work with PREQB in programs such as the NPDES permitting program, the nonpoint source management program, and the total maximum daily load (TMDL) program, towards the improvement of the water quality in the Culebrinas River and in Aguadilla Bay.

b) The substrate in the vicinity of the Aguadilla RWWTP is dominated by sandy bottom.

The 1987 fish trawl surveys were designed to assess fish populations associated with sandy bottoms located in the vicinity of the Aguadilla RWWTP. A total of 12 fish representing three species were collected at the three stations. Based on the 1987 fish trawl survey EPA concluded that fish were not abundant in the study area and that the sandy bottom type in the study area does not support large numbers of demersal or pelagic fish populations. This is a valid finding based on low number of fish captured during the 1987 trawl survey.

As a result of the findings of the 1987 trawl survey, fish monitoring approaches were modified to include five monitoring stations, various gears such as baited fish traps, gill nets and hook and line. Since October 1999, extensive fish monitoring data have been collected in the vicinity of the Aguadilla outfall. EPA's review of the fish monitoring data contained in the PRASA's ten Quarterly 301(h) Monitoring Reports (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c), indicate that fish communities were diverse and healthy at all stations, including the station nearest the outfall. All the fish observed were free of lesions or any other abnormalities and are not bioaccumulating toxic substances at levels of concern to fish or human health.

c) Given the planktonic and transient nature of the marine larvae organisms, the outside of the PREQB designated mixing zone, the Aguadilla RWWTP effluent has limited impact to the mortality of the planktonic organisms.

88. Comment: a) Changes in benthic monitoring protocols make assessments difficult between the earlier 1985 sampling and the more recent 1987 sampling. The suggestion that benthic structure remained similar from 1985 to 1987 is not supported by the sparse data presented. Diversity indicators are not adequately used to drive a conclusion. The commenter further states that the concentration of benthos, organisms associated with the sea floor, has dropped in proportion. In studies from 1985 the range of taxon was 118 to 271. In '87, the number had already fallen to the range of 46 -94, and in the data from January 2000, it had fallen to the range of 8-24.

b) Impact of the Culebrinas River is very evident: with alteration of sediment size distributions, and organic fractions being clearly reflected in the invertebrate community, with the domination of taxa generally considered to be pollution tolerant taxa such as *Mediomastus, Notomastus* and other capitellids, and certain amphipods. Similarly, the cluster analysis in1987 clearly demonstrates the greatest differences among stations with increasing distance from the river plume (but also the discharge point). The distribution of pollution tolerant taxa in the 1987 report make clear that the stations farthest from the discharge (and from the Culebrinas River mouth) have the least pollution tolerant presence. Degree of pollution tolerance among the taxa collected has not been determined for the Caribbean. Hence, EPA's conclusion that "low to moderate abundances of these species do not suggest that pollution stress is occurring" (1999, p. 34) is patently absurd. The distribution of presumably pollution-sensitive amphipods (minus Coroyhium, which is generally believed to be pollution tolerant) shows a similar decline inside the river plume and near the discharges one would expect. The Aguadilla Bay is negatively influenced by sediment pollution from the Culebrinas River and probably exacerbated by the

discharge.

c) “In January 2000, the farthest field sampling stations had radically different sediment distribution patterns, including gravel, absent in the riverine plume. Station A5 had the most sand at the greatest distance; stations A7 and A3, the next most at the average plume edges. TKN was also lowest at the widest distance.”

d) The pollution tolerant taxa (*Notomastus* and the spionids) were dramatically more abundant near the discharge and in the plume. “...EPA’s determination of the existence of a well-balanced community in the vicinity of the discharge is wishful thinking at best.”

88. EPA Response: a) The 1985, 1987 and 1999 - 2002 benthic surveys were performed by PRASA to support the Aguadilla RWWTP second round 301(h) application. As discussed in more detail in the Biological Impact of the Discharge Section of EPA’s August 2000 Aguadilla 301(h) Decision Document, a number of inconsistencies were observed in the benthic sampling among the 1985, 1987, and 1999 - 2002 benthic surveys. The major inconsistencies among sampling events included: 1) different sampling methodologies such as the number and location of stations, number of replicates per station, and size of sampling gear 2) difficulty locating and relocating and sampling the identified stations during the 1985 and 1987 surveys. Therefore, direct comparison among stations is not possible from the 1985 to the 1987, and from both the earlier surveys to the current 1999 - 2002 surveys. Because GPS is currently being used to locate stations, the issue of locating and relocating stations has been addressed. Other uncontrollable inconsistencies, such as 1) variation in bottom type within and among stations, and 2) dramatic changes in benthic population may occur naturally due to physical conditions such as high currents and storm events. Therefore, population dynamics may change between sampling events based on natural phenomena. While the first two issues have been addressed in the latest PRASA benthic monitoring (PRASA 1999c, 2000a and c, 2001a-d, 2002a-c) the last two issues will always be factors which confound the results of benthic monitoring. These issues aside, the 1985, 1987 and 1999 -2002 data are sufficient to demonstrate that a BIP of benthic organism existed and continues to exist in the vicinity of the proposed Aguadilla RWWTP outfall.

As explained above, it is not possible to assess the health of the benthic population by a station to station comparison among 1985, 1987 and 1999 - 2002 surveys. However, by comparing species diversity concepts (such as species richness and evenness) and diversity indices (such as the Shannon-Weiner Index) we can determine if a BIP of benthic organisms has existed in Aguadilla Bay from pre-discharge in 1985 to the present.

Biodiversity consists of two components: richness (taxonomic diversity) and evenness (distribution of individuals among taxa). Communities equal in richness can differ in diversity if one is less even than the other. The following is an explanation of the two concepts:

Species Richness - **a number of species present in a community. It does not, however, reflect relative abundance.**

Species Evenness -**Evenness is a function of relative abundances of the species that occur in a community. If the relative abundances are similar, then the community is more even and more diverse. If the relative abundances are more skewed, then the evenness (and diversity) is lower. By definition, evenness is constrained between 0 and 1.0. When there are similar proportions of all species then evenness is closer to one, but when the abundances are very dissimilar (few numbers of some species and high number of other species) then the value decreases.**

To overcome the fact that the species richness does not reflect relative abundance of species in a community, both richness and abundance information are incorporated into one diversity index. The use of diversity indices accounts for both richness and the evenness. The Shannon-Weiner Index which was used in the Aguadilla RWWTP 301(h) Waiver Monitoring Studies is one of the most widely used indices and is defined below:

Shannon-Weiner Index - **measures the order (or disorder) observed within a particular system. In ecological studies, this order is characterized by the number of individuals observed for each species in the sample. This measurement takes into account species richness and proportion of each species within the local aquatic community. Values of the Shannon diversity index for normal communities typically fall between 1.5 and 3.5. This index is affected by both number of species and their evenness. A greater number of species and a more even distribution the higher the value.**

The Shannon-Weiner Index and Species Evenness calculated for the 1985 (two), 1987 (one) and 1999 - 2002 (ten) surveys are as follow:

Survey Year	# Taxa (mean)	Shannon-Weiner Index (mean)	Species Evenness (mean)
1985	117 - 236 (156)	1.7 - 4.0 (2.8)	0.35 - 0.78 (0.55)
1987	46 - 95 (74)	2.4 - 3.3 (2.9)	0.56 - 0.76 (0.69)
1999 - 2002	8 - 50 (25)	0.5*- 3.4 (2.2)	0.17 - 0.91 (0.70)

*** = The lowest values, which ranged from 0.5 to 2.24 (mean =1.02), were observed at reference station A7. This station is second furthest from the Aguadilla outfall, third furthest from the river, and the substrate is high in silt/clay. High numbers of a colonial sipunculid (peanut worm), which is not considered a pollutant tolerant species, were found at this station.**

The data submitted by PRASA (PRASA, 1985, 1986, 1999c, 2000a and c, 2001a-d, 2002a-c), indicate that the Shannon-Weiner Diversity Index falls within an acceptable range and the Species Evenness is high. Based in this information and EPA's review of the extensive chemical, physical and biological data submitted by PRASA, EPA has determined that a BIP of benthic organisms has existed since 1985 and continues to exist in the vicinity of the Aguadilla RWWTP.

However, the post waiver monitoring program included as a requirement of the 301(h) modified NPDES permit will provide EPA data necessary to assess the long term impact of the Aguadilla RWWTP effluent on the local benthic community.

b) The Culebrinas River influences salinity, habitat, substrate distribution, and therefore, the benthic fauna in the vicinity of the Aguadilla Bay. The influence of the Culebrinas

River in Aguadilla Bay is natural and expected whenever a river discharges into an ocean environment. Observed responses of the benthic communities are representative of overall ecosystem status and are not necessarily a result of the decrease in water quality. Differences in species composition among stations may be attributed to changes in bottom type which may be attributed to variation in physical conditions influenced by oceanic and riverine (high energy) conditions in this area. The natural fluvial influences of the Culebrinas River can be seen by the type of sandy/silty sediment common to Aguadilla Bay. Sediment grain size will naturally influence the type of benthic populations one would expect to find at a particular location.

The PRASA 1987 survey was conducted just after the start-up of the Aguadilla RWWTP ocean discharge and consisted of a single benthic sample per station. The relatively higher abundances of species considered to be opportunistic or pollutant-tolerant, such as *Mediomastus* sp. and *Notomastus* sp., were found at station A9, which was the station closest to the mouth of the Culebrinas River. The presence of opportunistic and pollutant-tolerant species in the benthic community does not necessarily indicate the presence of pollutants in the sediment or a stressed benthic community. *Mediomastus* sp. observed at the sites located near the river mouth may be the result of increased physical disturbances and organic enrichment associated with fine sediment such as silt at these locations due to the oceanic (high energy) and riverine conditions in this area and not increased pollution levels. This finding can be supported by data reported by Swartz et al (1986).

The data provided by PRASA, in its ten Quarterly Monitoring surveys (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c) further supports the above. PRASA has identified the presence, at all benthic monitoring stations, of organisms considered to be pollution-tolerant species (*Capitella capitata, Glycinde solitaria, Marphysa sanguinea, Lumbrineris latreilli, Nephtys incisa, Mediomastus sp. and Paraprionospio pinnata*). However, none of these organisms were found, at any station, in concentrations exceeding 7% of the total number of organisms per station. Based on this data, EPA has determined that the presence of this pollution-tolerant species is not indicative of the sediment being polluted.

Notomastus sp., a member of the Capitella family some of which are considered pollutant tolerant, were found in high number at background station A4, edge of ZID station A2, and background station A3. However, the benthic communities identified at these stations were not representative of polluted communities. Species diversity and evenness were high demonstrating that these stations were not dominated by high numbers of a few pollutant tolerant species but rather represent a balanced indigenous population of benthic organisms.

Therefore, EPA has determined that the data collected by PRASA in 1985 and 1987 (PRASA, 1987) and from 1999 to 2002 (PRASA, 1999c, 2000a and c, 2001a-d, 2002a-c) demonstrate that a BIP of benthic organisms has and continues to existed in the vicinity of the proposed Aguadilla RWWTP.

c) A review of PRASA Waiver Monitoring data (PRASA, 2001a) indicates that the presence of silt/clay and sand changes from station to station and within station from sampling event to sampling event. It is unreasonable to expect that the bottom substrate be homogeneous throughout the entire study area. It is reasonable and acceptable that PRASA has identified and located stations which have similar substrate. Silt/clay and sand are the components of the substrate at all of the Aguadilla 301(h) benthic monitoring stations. The presence of silt/clay and sand at each station is dependent on the physical conditions, within the Aguadilla Bay, at the time of and prior to a sampling event. PRASA will continue, as required by the Aguadilla RWWTP 301(h) modified NPDES permit, to assess long term benthic community health. These data will allow EPA to assess the long term health of the benthic community in the vicinity of the Aguadilla RWWTP outfall.

TKN concentrations in the sediment did not exhibit a gradient response of decreasing concentrations from the station closest to the discharge to the furthest stations. The highest levels of TKN (220 - 1215 mg/kg dw) were observed at the deep water farfield station A4, which is the second closest station to the Aguadilla RWWTP outfall and the Culebrinas River. The second highest levels of TKN (160 - 870 mg/kg dw) were observed at reference station A7, which is the second furthest station from the Aguadilla RWWTP outfall and the third furthest from the river. The third highest levels of TKN (180 - 760 mg/kg dw) were observed at the ZID station A2, which is the closest station to both the Aguadilla outfall and the river mouth. The fourth highest levels of TKN (180 - 660 mg/kg dw) were observed at the farfield station A3, which is the third closest station to both the Aguadilla RWWTP outfall and the fourth closest station to the river mouth. The fifth highest or lowest levels of TKN (150 - 490 mg/kg dw) were observed at the reference station A5, which is the furthest station from both the Aguadilla RWWTP outfall and the river mouth.

Physical conditions within Aguadilla Bay, rather than the proximity to the Aguadilla RWWTP discharge or the Culebrinas River mouth, seem to dictate the distribution of both fine silt/clay and TKN in the sediment.

d) As explained in the above response b) the nature and characteristics of the benthic infauna are directly related to the type of substrate found at the sampling stations. The data presented by PRASA in its ten Quarterly Monitoring Reports (PRASA, 1999, 2000a and c, 2001a-d, 2002a-c) indicate that Spionids worms were found in low concentration never exceeding 6% the total number of organisms found at a station. The low numbers of spionids worms found during these surveys are indicative of a healthy, rather than impacted, benthic community. Based on the Shannon-Weiner Index (1.18 - 2.69, mean = 2.17) and the species evenness (0.57 - 0.89, mean = .84) the concentrations of *Notomastus* sp. found at the farfield station A4, although high, appear to be associated with the relatively soft sediment (high silt/clay) substrate found at station A4 and are not indicative of an impacted benthic community. EPA has determined that the data contained in PRASA's ten Quarterly Monitoring Reports (PRASA, 1999, 2000a and c, 2001a-d, 2002a-c) indicate that a balanced indigenous population of benthic organisms currently exist in the vicinity of the outfall.

As explained in detail in EPA response to comment 37, in accordance with 40 CFR §125.58(z), stressed waters means "those ocean waters for which an applicant can demonstrate to the satisfaction of the Administrator, that the absence of a balanced indigenous population is caused solely by human perturbations other that the applicant's modified discharge." The extensive chemical, physical and biological data collected in the vicinity of the Aguadilla RWWTP from 1985, 1987, and 1999 to 2002 indicates that the waters of Aguadilla Bay support a balanced indigenous population of fish, shellfish and wildlife (PRASA, 1985, 1987, 1999c, 2000a and c, 2001a-d, 2002a-c, EPA, 2000a). Therefore, in accordance with the 301(h) regulation, EPA does not consider the waters in the vicinity of the Aguadilla RWWTP discharge to be stressed waters.

The benthic invertebrate community will continue to be monitored as specified in the Aguadilla RWWTP 301(h) Post Waiver Monitoring Program. This monitoring program is included as part of the 301(h) modified NPDES permit issued by EPA with this action. This data will allow the Region 2 301(h) Review Team to continue to assess the impact of the Aguadilla RWWTP on the local benthic community over the life of the permit.

89. Comment: a) The coral survey referenced in the 1987 application is incomplete because the depth and distance from shore differs among coral stations and the coverage of the coral survey is not described. b) The 1987 and 1999-2000 coral survey are at different sites, and therefore, are not comparable. Aerial photographs provided by their colleagues indicates that other hard-bottom areas exist in the zone of influence and maps and text descriptions of the 1999 to 2000 coral station locations do not match up. c) Coral bleaching was noted in underwater videography, as further evidence of stress in this benthic community. d) The Executive Order for Coral Reefs should apply to coral communities found in the vicinity of the Aguadilla outfall. e) The 1999 surveys of hard substrate areas found high frequency of filamentous algae, which can be an indicator of nutrient enrichment. f) Improving the treatment requirements to secondary would help reduce nutrient and sediment input, both of which are related to turbidity.

89. EPA Response: a) The coral surveys referenced in the 1987 301(h) application were conducted in April and June 1985. These coral surveys were conducted prior to completion of construction and the discharge of primary effluent from the Aguadilla RWWTP. The purpose of these coral surveys was to provide a baseline of knowledge on the location and health of coral reefs in the vicinity of the Aguadilla RWWTP outfall. The data obtained from these 1985 coral monitoring programs indicate that there are no well developed coral reefs in the vicinity of the proposed Aguadilla outfall, that the scattered coral community in this area represents a small percentage of the benthic fauna and that the coral that was present was relatively healthy and diverse.

The findings of the 1985 coral surveys are consistent with the findings of the late 1970's Puerto Rico-wide coral study conducted in the late 1970's by Goenaga and Cintron (1979). Goenaga and Cintron (1979) describe the coral development in the general area of the Aguadilla proposed outfall as follows: " Poorly developed fringing reefs, consisting primarily of partially dead <u>Acropora palmata</u> (elkhorn coral) and sparse gorgonians, occur

on the north side of the Rincon Peninsula from Punta Higuero to Punta del Boqueron...North of this point only scattered, undeveloped, coral growth occurs." Goenaga and Cintron note only "poorly developed fringing reefs" to the south of the discharge and "scattered, undeveloped coral growth" to the north. The data presented by Goenaga and Cintron (1979) and by PRASA's 1985 coral monitoring surveys is similar and describe the presence of poorly developed and scattered coral communities in the vicinity of the Aguadilla RWWTP.

One of the commenters from the University of Puerto Rico (UPR) (See comment # 102) conducted the 1985 coral survey for PRASA describes coral structure in the vicinity of the Aguadilla RWWTP by stating that states that *"...reefs are not made of coral, but rather of stone. Reefs are submerged stone structures, the result of erosion and sinking of these structures due to rising sea levels, and on which several corals are also growing."* He describes the coral growth on these reefs as follows: *"... in 1985 the reef that is more or less at the depth where the underwater effluent pipe ended up being located, presented a percentage of live coral coverage—which is the basic parameter that is used to refer to the ecological health of coral reef as an ecosystem—presented a percentage of 2.9 of live coral."*

Since 1985, PRASA has conducted numerous post discharge coral monitoring studies in the vicinity of the Aguadilla RWWTP and all have been consistent with the findings of the pre-discharge coral surveys conducted by PRASA 1985 and Goenaga and Cintron (1979).

It is EPA's determination that the 1985 coral surveys are adequate and provide sufficient information to allow EPA to assess the conditions of coral community at that time and provided a pre-discharge snapshot of the type and health of the coral community located in the vicinity of the Aguadilla outfall.

b) In the 1980's when the initial studies were conducted, Puerto Rico was not covered by a navigational system such as LORAN C or Global Positioning System (GPS). There was no accurate way to position and/or reposition a vessel over a specific location, such as a sampling station, with the degree of accuracy available now using GPS. In 1985, stations were located and reacquired using a hand held compass and triangulation methods. This was not an accurate method. In 1987, PRASA stated it used a hand held compass, triangulation methods, as well as a global satellite navigation unit to locate and reacquire stations used in the 1985 survey. It seems that PRASA relied on hand held compass and triangulation and not the global satellite navigation unit because navigational coordinates were not provided for the station used in 1987. The inability to accurately locate and relocate sampling sites was a reality in Puerto Rico until the current GPS system became available. Since its 1999 first Quarterly Monitoring survey, PRASA has been using Differential GPS to locate and reacquire its monitoring stations. Using this system, PRASA will only accept a sample as being on station if it is collected within a 30 m radius of the proposed station location. This approach will assure accurate station location and reacquisition in all future waiver monitoring events.

PRASA attempted to locate the current coral monitoring station as close as possible to two of the original 1987 coral monitoring stations. However, for the reasons explained above the proposed 1987-based coral monitoring stations were not on coral habitat. PRASA using echosounder observations and diver verification, established alternative permanent coral station locations as follow:

Station	Latitude	Longitude	Location from Outfall
Alt. ASG2	18^0 24.782'	67^0 10.880'	2,720 ft (828 m) NE
Alt. ASG3	18^0 23.258'	67^0 13.350'	13,700 ft (4,186 m) SW

Coral Monitoring Stations Alt. ASG2 and Alt. ASG3 represent typical coral communities present in the vicinity of Aguadilla Bay and are located near the outfall. These stations will be used for all future coral monitoring.

EPA concurs with the commenter's statement that other hard bottom areas surely exist in the vicinity of the Aguadilla RWWTP outfall. The above stations, are representative of typical hard bottom communities and will be used to assess the long term affect of the Aguadilla RWWTP on coral communities.

Please note, while the above station coordinates are correct, PRASA incorrectly plotted coral station Alt. ASG3 to the north west of the outfall, in Exhibit 6-1 of its second Quarterly Monitoring Report (PRASA, 2000a). Coral Station is actually located south west of the Aguadilla RWWTP outfall. See Attachment 2 to this document for a chart showing the correct location of coral station Alt. ASG3.

c) EPA agrees with the commenter's statement that coral bleaching was noted in underwater video. Coral bleaching is a world wide phenomena occurring globally in temperate, tropical and subtropical waters. This phenomena is believed to be associated with global warming and sea water temperature rise. EPA does not believe the Aguadilla RWWTP discharge causes or contributes coral bleaching. However, the post waiver monitoring program included as a requirement of the 301(h) modified NPDES permit will provide EPA data necessary to assess the long term impact of the Aguadilla RWWTP effluent on the local coral community.

d) According to the definition provided in the Executive Order for Coral Reefs, "coral reef ecosystems" means those species, habitats, and other natural resources associated with coral reefs in all maritime areas and zones.

The data provided by PRASA and supported by other coral monitoring indicate there are no coral reef systems in the vicinity of Aguadilla RWWTP discharge. However, isolated sparse coral growth in the area is healthy and not impacted by the Aguadilla RWWTP's discharge. PRASA has demonstrated that the Aguadilla RWWTP discharge will not adversely impact the coral communities located in the vicinity of the Aguadilla RWWTP's outfall. EPA will continue to assess long term impact to the coral communities via the

Aguadilla RWWTP Post 301(h) Waiver Monitoring Program.

e) As discussed in more detail in EPA response to comment # 48, the Aguadilla RWWTP is currently meeting EQB's nutrient criterion for total nitrogen of 5 mg/L. In addition, the phytoplankton, coral, and algal community data submitted by PRASA indicates that nutrient enrichment due to the Aguadilla RWWTP discharge is not adversely impacting the coral communities located in the vicinity of the Aguadilla RWWTP's outfall. The Post Waiver Monitoring Program included as a requirement of the 301(h) modified NPDES permit will provide EPA data necessary to assess the long term impact of the Aguadilla RWWTP effluent on the local coral community.

f) EPA determined that PRASA has demonstrated that the Aguadilla RWWTP meets all nine 301(h) requirements as implemented by regulations contained in 40 CFR Part 125, Subpart G (59 Fed. Reg. 40642, August 9, 1994), including compliance with all applicable Commonwealth WQS and EPA marine criteria, which assure the protection and propagation of a Balanced Indigenous Population (BIP) of fish, shellfish and wildlife, and human health in the vicinity of the Aguadilla RWWTP ocean outfall.

EPA has no authority to require that an ocean discharge meeting all the requirements of Section 301(h) of the CWA, and regulation, 40 CFR Part 125, be eliminated in favor of secondary treatment.

90. Comment: a) Chlorophyll *a* data do not provide evidence that phytoplankton communities are not affected by the discharge. b) No algal community studies have been conducted. "EPA's overall conclusion that the continued existence of a large (and enlarging) primary discharge is compatible with a "balanced indigenous population" in this area is based on sparse evidence and erroneous interpretation, and is simply ludicrous."

90. EPA Response: a) EPA believes that the use of chlorophyll *a* data is appropriate in assessing the Aguadilla RWWTP's impact on the phytoplankton community. As part of its ten quarterly monitoring surveys, PRASA (1999c, 2000a and c, 2001a-d, 2002a-c) has collected chlorophyll *a* data at all ambient monitoring stations. During these surveys ambient chlorophyll *a* concentrations ranged from 0.1 to 0.66 mg/m^3. Burkholder, et. al. (1972) noted that chlorophyll *a* concentrations in shallow Caribbean bays studied range from 0.05 mg/m^3 to 0.67 mg/m^3 in the absence of blooms, and from 25.0 mg/m^3 to 206.0 mg/m^3 during bloom conditions. Based on the above, EPA concludes that chlorophyll *a* concentrations in the vicinity of the Aguadilla RWWTP discharge are consistent with non-bloom conditions observed in the Caribbean and indicate the Aguadilla RWWTP has not adversely impacted the local the plankton community.

As indicated in the August 2000 Aguadilla 301(h) decision document, ambient concentrations of chlorophyll *a* will continue to be monitored as specified in the Aguadilla RWWTP 301(h) Post Waiver Monitoring Program which is included in the 301(h) modified permit issued by EPA with this action. This data will allow the Region 2 301(h)

Review Team to continue to assess the impact of the Aguadilla RWWTP on the local phytoplankton community over the life of the permit.

b) Since 1999, on a semiannual basis, as part of the Aguadilla Waiver Monitoring Study (PRASA 1999c, 2000a and c, 2001a-d, 2002a-c), algal community monitoring is conducted as part of the coral communities monitoring in the vicinity of discharge.

On page 38 of the August 10, 2000 Aguadilla RWWTP 301(h) decision document, EPA provides the following assessment of the impact of discharge on algal community, under section of "Habitats of Limited Distribution", in the vicinity of the Aguadilla RWWTP discharge:

> **" Station ASG-2 was established in a hard-ground habitat that rises from a depth of 15 meters to a fairly even platform. This station is close to the outfall and the Rio Culebrinas. Station ASG-3 is located in a zone of rock outcrops farther offshore than ASG-2. Each coral station consisted of three permanent 10-m transects, six quadrant stations, and one 10 minute random video transect.**
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> **Station ASG-2 is in an area of high turbidity and poor light penetration due to the Rio Culebrinas discharge. Observations made during the video transect showed that the substrate was dominated by a dense algal turf packed with fine sediments. Coralline algae, red algae and flesh algae were found abundant in the algal turf. A total of 16 coral species were identified. The attached epifauna were presented in relatively small isolated patches and consisted of sponges, hard corals and soft corals. The mean percent cover at station ASG-2 by algal turf was 75.1, by fleshy algae was 10.6 percent (for a total algal cover of 85.7 percent), by sponge was 6.3 percent (range: 4.7 to 9 percent) and by live coral was 2.5 percent (range: 0 to 7.4 percent), respectively.**
>
> **Station ASG-3 is one with many rock promontories that rise from a mostly sandy mud sediment base at approximately 20 meters to a fairly uniform terrace at 12 meters. Algal turf is the dominant benthic component of the biota. Numerous healthy scleractinian coral colonies were present. A total of 20 coral species were identified, including small to moderate-sized colonies. The bottom was covered with a thin algal turf, fleshy algae and small sponges. The mean percent cover at station ASG-3 by algal turf was 78.3, by fleshy algae was 4.5 percent (for a total algal cover of 82.8 percent), by sponge was 2.4 percent and by live coral was 11.6 percent (range:3.2 to 19.1 percent), respectively.**
>
> **The January 2000 coral survey revealed results similar to those observed in the 1987 coral survey. Well-developed coral reefs are not present in the vicinity of the Aguadilla RWWTP's outfall. The results of these coral surveys indicate that coral communities are poorly developed and the mean percent coral coverage at the monitoring stations was low and ranged between 0.0 to 19.1 percent.**
>
> **A macroalgal turf community covered at least 80 percent of the bottom at each station. The benthic coral communities surveyed in the vicinity of the Aguadilla outfall appear to be healthy and support a BIP of marine organisms. The nearest scattered coral growths are located approximately 1.8 km (1.1 mi) away from the discharge. All scattered coral communities, while sparse, are healthy and un-impacted by the discharge."**

Based on the data reviewed, EPA concludes that PRASA has demonstrated that the Aguadilla discharge will not adversely impact any algae communities that may be located in the vicinity of the Aguadilla RWWTP's outfall. However, the 301(h) Post Waiver Monitoring Program included as a requirement of the 301(h) modified NPDES permit will

provide EPA the data necessary to assess the long term impact of the Aguadilla RWWTP effluent on the local algal community.

91. Comment: The marine studies show that the 301(h) waiver requirements are being met. These studies were completed at a cost of over $10 million, with more than $2 million being allocated to evaluations of the impact from plant discharge. The results of the monitoring and of the marine studies show that our primary plants are in compliance with the discharge limits set in the discharge permit issued by the EPA and with the water quality requirements of the Environmental Quality Board. Furthermore, they show that the marine environment has not been adversely affected by 14 years of discharging by the primary treatment plant.

91. EPA Response: EPA concurs. EPA's review of all the available data, including Aguadilla RWWTP DMR data and the Quarterly Monitoring Reports (PRASA 1999c, 2000a and c, 2001a-d, 2002a-c), demonstrates that the Aguadilla RWWTP meets all 301(h) requirements, including compliance with all applicable WQS necessary to assure protection of human health and the protection and propagation of a BIP of fish, shellfish and wildlife, in the vicinity of the ocean outfall, as required by regulations contained in 40 CFR Part 125, Subpart G.

92. Comment: The University of Puerto Rico worked with the AFI on the studies linked to the request for the 301(h) permit, and in particular the marine studies on the Aguada/Aguadilla bay's receiving waters. The main goal of the fish study was to determine or examine whether in the area of the underwater effluent pipe there was a balanced or typical population for the Aguada/Aguadilla island shelf. To this end, five stations were established, one of which was in the area of the underwater effluent pipe, while the other four were used as controls. Numerous methods were used to study the fish community, including pots, line fishing, and underwater sample counting. The results of the study, in which collections were made, showed that five species comprised 85 percent of the total, which was of 280 individual specimens. Among them, the dominant species were the stripped red porgy, the ling or grunt, the chapin, and also the dusky grouper. These five predominant species were observed throughout the entire study area including the outfall pipe. The most abundant fish collected throughout the study was the stripped red porgy, which were caught in a similar size range throughout the entire study area. The most stripped red porgies were caught at the outfall pipe station, although it is possible that there were no differences of statistical importance. Tissue samples from stripped red porgy and dusky grouper caught at the outfall pipe and the control stations were analysis to see if there was any accumulation in their tissue, and there were no factors found that exceeded the limits established as fit for human consumption. In other words, it was determined that they were suitable for human consumption.

As regards the coral reef population, of the coral reef communities, the commenter mentions that the University of Puerto Rico also participated in the 1985 background studies. Before these effluent pipes were in operation, background studies were being done of the marine communities in the area, and they studied a series of coral reefs. One of them was rather close to the area of the effluent pipe. They found that in that coastal area, that the reefs in that coastal area of

Aguadilla have poor growth of coral, of stone coral colonies. In fact, in 1985 the reef that is more or less at the depth where the underwater effluent pipe ended up being located, presented a percentage of live coral coverage—which is the basic parameter that is used to refer to the ecological health of coral reef as an ecosystem—presented a percentage of 2.9 of live coral. This time our strategy was to try to find the coral reef closest to the effluent pipe and examine its ecological state, conducting similar studies of the percentage of linear coverage of live coral. In this case, in the reef that we were able to study, was located near the effluent pipe at a depth of some 43 feet; there was coverage of 2.8 percent of live coral, which was basically a repeat of the initial findings from a prior study that we did before the plant began operations. Basically, the perception of the reef, with regard to the structural composition of the underwater community, is that these reefs are not made of coral, but rather of stone. Reefs are submerged stone structures, the result of erosion and sinking of these structures due to rising sea levels, and on which several corals are also growing. The commenter had some pictures for you today, but we have not been able to get the equipment running. They do show the growth of live coral, although this coral growth still remains relatively low. They searched extensively for coral reefs in the area and found a coral reef that he might call a marginal system, stretching it…well, in the, that is to say, 2.2 miles to the west of the underwater effluent diffuser, which does fall into the Aguada area, and this coral reef showed an almost 11 percent coverage. In conclusion, they find that, within the area of the underwater effluent pipe there is a balanced population of fish consistent with the murky bottom habitats found in the area of the island shelf of Aguadilla and in adjacent areas. They do not think that the effluent pipe has had a negative effect on the coral reefs of the area since there are no coral reefs in its immediate area. Furthermore, the reefs in this area are stone reefs severely affected by a series of factors that do not necessarily include the underwater effluent pipe and that are indeed related to the condition of the estuary and to the strong waves on the Aguada and Aguadilla island shelf.

92. EPA Response: EPA concurs. The Aguadilla Quarterly Monitoring began in 1999, PRASA has now submitted ten Quarterly Monitoring Reports that include extensive ambient data on water quality and marine biological communities. EPA's approval of the Aguadilla RWWTP 301(h) modification from the requirements of secondary treatment is based on the applicant's demonstration that this RWWTP meets all nine 301(h) requirements as implemented by regulations contained in 40 CFR Part 125, Subpart G, including compliance with all applicable WQS which protect human health and assure the protection and propagation of a BIP of fish, shellfish and wildlife, in the vicinity of the ocean outfall.

93. Comment: One commenter indicates that aside from the PRASA's Quarterly 301(h) monitoring, there is no regular beach monitoring. What little monitoring there is, indicate there are water quality concerns at the beaches. There is no adequate program of informing the public, surfers and fishermen who are in greater risk due to their direct contact with the polluted water. The mixing of chemicals, both organic and inorganic, from the treatment plant represents a threat to the warm waters here in the Caribbean.

93. EPA Response: EPA does not have the authority to require PRASA to implement a

beach monitoring program. However, on October 10, 2000, the Beaches Environmental Assessment, and Coastal Health Act (or Beach Act) was signed into Law. The Beach Act applies to coastal recreational waters and the Great Lakes. The Beach Act requires EPA to publish performance criteria for monitoring and for prompt public notification of any exceedence. Recently, EPA awarded a grant to PREQB to develop a monitoring and assessment plan pursuant to the Beach Act. Once PREQB develops and submits its plan and EPA has reviewed and approved the plan, the beach monitoring and public notification program will be implemented, by PREQB. It should be noted, that PREQB has designated waters in the vicinity of the Aguadilla RWWTP, including some of the beaches, as Class SC waters. Class SC waters do not support primary contact. People should not swim, surf, dive or otherwise practice direct contact recreation in waters classified SC.

In addition, EPA does not concur that the mixing of chemicals, both organic and inorganic, from the treatment plant represents a threat to the warm waters in the Caribbean. EPA's approval of the Aguadilla RWWTP 301(h) modification from the requirements of secondary treatment is based on the applicant's demonstration that this RWWTP meets all nine 301(h) requirements as implemented by regulations contained in 40 CFR Part 125, Subpart G, including compliance with all applicable WQS which protect human health assure the protection and propagation of a BIP of fish, shellfish and wildlife, in the vicinity of the ocean outfall.

I. Others

94. Comment: While there is a need to continue using the Aguadilla RWWTP, the environmental damage done by the Aguadilla RWWTP primary discharge is irreparable. Therefore, the commenter proposed to prepare a "joint resolution" and present it to the Senate of Puerto Rico asking that they allocate the sum of $50 million to upgrade the Aguadilla RWWTP to secondary treatment. The commenter believes that the Government of Puerto Rico would sign the resolution.

94. EPA Response: EPA's approval of the Aguadilla RWWTP 301(h) modification to the requirements of secondary treatment is based on the applicant's demonstration that the Aguadilla RWWTP meets all nine 301(h) requirements as implemented by regulations contained in 40 CFR Part 125, Subpart G, including compliance which assure the protection and propagation of a BIP of fish, shellfish and wildlife, in the vicinity of the Aguadilla RWWTP ocean outfall.

At this time, the Government of Puerto Rico seeks approval of a 301(h) waiver from secondary treatment for the Aguadilla RWWTP. The Government of Puerto Rico is, of course, free to proceed with a voluntary upgrade to secondary treatment. In fact, EPA and the Government of Puerto Rico have entered a Memorandum of Agreement that governs such a voluntary upgrade.

95. Comment: Issuance of a 301(h) waiver for the Aguadilla RWWTP would damage tourism especially to the towns and beaches of Rincón, and Aguada, and Aguadilla.

95. EPA Response: EPA concludes that the Aguadilla RWWTP discharge does not pollute the local beaches.

96. Comment: The west coast of Puerto Rico has been "disadvantaged" and "forgotten" in the economic development of the island. Western Puerto Rico has been de-industrialized and significantly impacted by so many plants leaving the area, especially the sewing mills, and next, perhaps, the tuna factories. The Government of Puerto Rico should revise its regional plan to address the above and to assure the needs of Western Puerto Rico are met.

96. EPA Response: This comment does not relate to EPA's approval of the 301(h) waiver for the Aguadilla RWWTP.

97. Comment: The operation of a primary plant in Aguadilla has done a lot of damage to commercial fishing. Forty years ago, all along the coastline, there were fish from 35-100 fathoms all the way down to 110 fathoms. People could catch snapper all along this coast. But since the plant was built years ago, the area at the plant or near the plant has been known as the dead area, since snapper can no longer be found there. This area is divided in two parts, the area at Parque Colin, there is an area that extends to where the Navy antenna is located, where you can fish for snapper. But once when someone get near the antenna, where the plant is, there is no longer any snapper. Now people can no longer fish in the shallower waters or in the deep waters, because there are no fish there. For this reason, fishermen have lost revenue from nearby waters and they have to go farther out, farther from beaches and farther from homes. They have to go to Rincón or to Isabela, into much deeper waters in both places. This means that they are losing ground on the monetary level because they have to buy more gasoline and a lot more oil for the mix that they use in their motors. This also involves a lot more time for the voyage from Parque Colin toward the Rincón area.

97. EPA Response: EPA has determined that the Aguadilla RWWTP discharge will not impact local or pelagic fish and prior to finalizing its decision to approve the Aguadilla RWWTP 301(h) waiver, EPA completed the required EFH consultation with the NMFS and the Caribbean Fisheries Management Council. The Caribbean Fisheries Management Council did not provide comments on EPA's EFH assessment. NMFS, in a letter dated December 13, 2001, provided its concurrence and agreed with EPA's EFH assessment that EPA's approval of the Aguadilla RWWTP 301(h) waiver from secondary treatment would not cause impact to EFH in the vicinity of the Aguadilla RWWTP.

98. Comment: One commenter states that many people in their group use the waters of the Bay for recreation and they are concerned about their own health as well. There are surfers that have seen a gray foam that forms when the sea is very turbulent and the waves are strong. This happens at Table Rock at Boqueron Point, which is very close to the discharge pipe. Judging from the foul odors and bad taste, they usually surf directly on top of wastewater there. There are

also bad odors at the Bridges Beach in the town of Aguadilla. Many of them do not dare to surf there because they almost always develop some infection afterwards. This may happen on the skin, in body orifices like the ears, or may consist of some general viral symptoms. They are very doubtful that the treatment over the last 15 years is really removing dangerous organisms that can survive several hours or more in the sea water, like the cysts of the *Giardia* parasite.

98. EPA response: EPA has reviewed the total and fecal coliform data contained in DMRs and in PRASA's ten Quarterly Monitoring Reports (PRASA 1999c, 2000a and c, 2001a-d, 2002a-c) and because the Aguadilla RWWTP 301(h) modified NPDES permit requires that the effluent be disinfected and includes standards end-of-pipe for total and fecal coliform, it is EPA's determination that, is protective of human health and will not cause increased incidences of the waterborne pathogen-related diseases identified by the commenter.

EPA understands that a well operated and maintained wastewater treatment plant, either primary or secondary with mostly domestic influent, should not cause foam or odor problems in the surrounding neighborhoods. EPA has incorporated into the proposed permit a PMP that must be implemented by the permittee. The PMP is not only required for the wastewater treatment plant, but for the pump stations and sewer lines as well. EPA will evaluate the monthly DMR and will continue to inspect the facility and related appurtenances to determine compliance with permit conditions, including the implementation of the PMP and will take appropriate enforcement actions if violations are detected.

While the Aguadilla RWWTP may not cause violations of the Class SC total and fecal coliform criteria, a mixing zone is an area within which WQS may be exceeded. On February 25, 2001, EPA sent a letter to Mr. Carlos Padin, Secretary, of the Government of Puerto Rico's Department of Natural and Environmental Resources, suggesting that, because there may be exceedences of PRWQS within a designated mixing zone, "...it would be prudent to advise people not to swim in the vicinity of a mixing zone. We are hereby recommending that your Agency have precautionary closures for all approved mixing zones in the island of Puerto Rico." This applies to those mixing zones for the treatment plants that have the 301(h) modified permits as well as all other facilities with permits that allow a mixing zone.

99. Comment: There are two local governmental agencies, which are called the Permits and Regulation Agency (ARPE) and the Planning Board, which are the main causes of over development in Puerto Rico and are the main reason behind the increase in flows at these treatment facilities.

99. EPA Response: The existing NPDES permit and the final Aguadilla 301(h) modified NPDES permit contain the same monthly average flow of 8 MGD. However, concentrations of BOD are reduced further in the proposed permit. Although, it allows the applicant to discharge at a daily maximum of 16 MGD, the average monthly loadings for

TSS and BOD remain the same or less.

The PRASA has requested the following average discharge volume and mass loadings:

Existing and Applicant Requested 301(h) Aguadilla Discharge Limits

Parameter	Existing Limits	301(h) Proposed Limits
Flow, MGD (Monthly Average)	**8**	**8 [a]**
BOD_5 Loadings, kg/day	**none**	**3,213.07 [a]**
TSS Loadings, kg/day	**none**	**2,121.84 [a]**

a = Based on PRASA's Aguadilla NPDES Permit Renewal Application, March 1999.

As explained in detail in EPA's Aguadilla Decision Document entitled "Analysis of the Section 301(h) Secondary Treatment Waiver Application for the Aguadilla Regional Wastewater Treatment Plant," the above proposed effluent volume and mass loadings will result in the compliance with all applicable federal and Commonwealth WQS and 301(h) criteria.

100. Comment: One commenter resents the time pressure that the EPA has put on the community to provide comments to EPA's Aguadilla RWWTP 301(h) decision. EPA has done nothing or very little to make 301(h) decisions for many years, and now, in the last two months, has asked the community for input. In addition, the commenter states that the community feels that the granting of these waivers is a done deal, that no matter what they present to EPA, a decision to grant the waivers is already made.

100. EPA Response: EPA has provided adequate time to allow for public review of its proposed Aguadilla RWWTP 301(h) decision. EPA provided a 45 day public comment period, a formal public hearing, and granted an extension of the initial 45 day comment period.

In addition to the formal public participation process, EPA has reached out to community leaders and offered numerous opportunities for discussion and explanation of EPA's proposed 301(h) decisions in an informal small group setting. The goal was to empower community leaders to participate effectively in the 301(h) decision-making process. One meeting was held in EPA's San Juan Office on September 12, 2000 with representatives of "Ciudadanos del Karso". Another meeting was held on September 14, 2000 in Aguadilla with a representative of "Ciudadanos en Defensa del Ambiente" (CEDDA). EPA had a translator present at the second meeting to assist in the communication process.

EPA is making a final decision to grant the waiver after a careful review of all the data submitted and all of the comments that were made. The reasons for the decision are set forth in the Decision Document and in this Response to Comments to the public comment.

101. Comment: The Aguadilla RWWTP was not built in the proper location to minimize impact, since the current location of the plant is the best place for fishing. Because of the ocean outfall, the area is no longer good for net fishing. Fisherman can longer cast nets into these areas because of the rocks that support the pipe. The nets get tangled on those rocks.

101. EPA Response: Aside from the physical problem associated with casting nets on and around the Aguadilla RWWTP's outfall, EPA's has determined the its 301(h) decision does not impact the fisheries in the vicinity of the Aguadilla outfall. The physical problem would be the same whether the discharge was of advanced primary, or of secondary effluent.

102. Comment: The community has no proof that the sludge taken to a landfill in the municipality of Moca is not toxic. The sludge should be analyzed for toxics annually.

102. EPA Response: As required by the CWA Amendments of 1987, the U.S. EPA developed a new regulation to protect public health and the environment from any reasonably anticipated adverse effects of certain pollutants that might be present in sewage sludge. This regulation, The Standards for the Use or Disposal of Sewage Sludge (40 CFR Part 503), became effective on March 22, 1993 and establishes monitoring and sampling requirements which depend on the amount of sludge generated by a facility and the final use of the sludge. According to this regulations, PRASA must evaluate sewage sludge for hazardous waste characteristics specified at 40 CFR Part 261 Subpart C. Sludge shall be tested after final treatment prior to leaving the POTW site. Sewage sludge determined to be a hazardous waste in accordance with 40 CFR Part 261, shall be handled according to RCRA standards for the disposal of hazardous waste in accordance with 40 CFR Part 262. The disposal of sewage sludge determined to be a hazardous waste, in other than a certified hazardous waste disposal facility shall be prohibited. In addition, PRASA must test sewage sludge in accordance with the method 9095 (Paint Filter Liquids Test) as described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" (EPA Pub. No. SW-846). The permittee shall comply with 40 CFR Part 503, which requires preparers of sewage sludge to submit annual reports no later than February 19th of every year. The annual report shall include the following information:

a. Amount of sludge generated, in dry metric tons.
b. Use or disposal practices.
c. Amount of sludge that goes to each use or disposal practice.
d. The name and address of the Municipal Solid Waste Landfill.
e. Results of the hazardous waste determination (per 40 CFR Part 261) conducted on the sludge to be disposed.
f. Results of the Paint Filter Liquids Test conducted on the sludge to be disposed.

PRASA's annual sludge monitoring has demonstrated that sludge from the Aguadilla

RWWTP is not hazardous.

103. Comment: The community has been given very little monitoring information and has no information on monthly DMR monitoring done by the Aqueduct and Sewer Authority. The commenter requested that the more than 4,000 families that surround the plant be given copies of the DMR Reports.

103. EPA Response: Permit compliance monitoring of the Aguadilla RWWTP effluent has been required since the Aguadilla RWWTP first began discharge in 1986. These DMR data are available to the public and can be reviewed by contacting: Carl-Axel P. Soderberg, Director of the Caribbean Environmental Protection Division, U.S. EPA, Centro Europa Building, Suite 417, 1492 Ponce De Leon Avenue, Stop 22, Santurce, Puerto Rico 00907-4217.

104. Comment: The Public Policy Law of Puerto Rico and the regulations governing environmental impact statements stipulate that alternatives to the actions proposed must be presented so that the action presenting the least environmental impact can be chosen. Information on violations to the CWA at the Aguadilla treatment plant, on the dangers to the users, on redress, and on the use of the money from penalties, if they have been collected, have not been made available to the public or discussed at any time with those affected. That plant has been operating for 14 years and this is the first time that the community has been given the opportunity to come and find out what the plant has been doing. Will PRASA or the EPA guarantee the health and safety and quality of life to the users and neighbors of the plant and the proper functioning of the plant. Paying a fine does not solve the problem of health and safety. The constant problems at the plant…excessive chlorine, cyanide, sulfur, boron, water toxicity and chronic toxicity. The average flow at the plant is of 8 million gallons per day. Right now it is processing between 4.5 and 5.5 million gallons. If they were to connect all…another 50 percent, the plant will become obsolete.

104. EPA Response: On August 21, 2000, EPA proposed a 301(h) waiver and a NPDES permit for the Aguadilla RWWTP and invited the community to participate in a public hearing which was held on September 21, 2000. Notice of EPA's proposed actions for this facility and this Hearing were published in El Vocero and in the San Juan Star. Furthermore, EPA reached out to community leaders to offer the opportunity for an explanation of EPA's proposed 301(h) decisions in an informal small group setting. The goal was to empower these community leaders to participate effectively in the 301(h) decision-making process.

As part of the decision process in August 2000 EPA prepared a document called "Analysis of the Section 301(h) Secondary Treatment Waiver Application for The Aguadilla Regional Wastewater Treatment Plant, NPDES No. PR 0023736, Puerto Rico." In this document, which EPA made available to the public, EPA reviews, summarizes and draws conclusions regarding the Aguadilla RWWTP compliance with the requirements of Section 301(h). EPA has determined that the Aguadilla RWWTP discharge will comply with all nine

requirements of Section 301(h) and 40 CFR 125, Subpart G and has and will continue to protect and allow the propagation of a balanced, indigenous population of shellfish, fish and wildlife.

The Aguadilla 301(h) modified permit will include effluent limits for flow (8 MGD, monthly average), BOD_5 (30% removal, 106 mg/L and 3,213 kg/day) and for SS (50% removal, 70 mg/L and 2,121 kg/day) which reflect the operating capabilities of the facility. In addition, a 301(h) waiver from the requirements of secondary treatment is granted for the 5 year life of the permit. The post waiver monitoring program included in the 301(h) modified permit is designed to provide EPA with the information it needs to determine PRASA's continued compliance with all of the 301(h) requirements.

105. Comment: a) The amount of money needed to convert the Aguadilla plant into a secondary treatment facility, mentions some $20 million. The cost of converting the six primary treatment plants to secondary treatment it is estimated to be $500 million. Right now the AFI has a budget of $2.6 billion for improvements to filtration and treatment plants. PRASA should invest $500 million, convert the six plants into secondary treatment facilities and still have $2.1 billion left to improve filtration. b) How can PRASA determine the bio-accumulation of toxins in that fish if they are taking only one sample per year?

105. EPA Response: a) The Government of Puerto Rico has pursued a 301(h) waiver for the ocean discharge of advanced primary effluent, for its Aguadilla RWWTP and the record supports EPA's decision to grant the waiver since all nine 301(h) requirements are met. EPA, therefore, cannot require PRASA to voluntarily expend the capital necessary to upgrade the Aguadilla RWWTP to full secondary treatment.

b) With regard to the fish bioaccumulation study, in October 1999, a total of 19 fishes (three species), and in January 2001, a total of 41 fishes (6 species), respectively, were analyzed for approximately 150 substances. The toxic substances analyzed, in flesh of fish caught in the vicinity of the Aguadilla RWWTP's ocean outfall, are not bioaccumulating, in the fish flesh, at levels of concern to the fish or to human health.

106. Comment: The citizens of Aguadilla and the people of Rincón will continue to fight the issuance of a 301(h) waiver for the Aguadilla RWWTP.

106. EPA Response: EPA's approval of the Aguadilla RWWTP 301(h) modification from the requirements of secondary treatment is based on the applicant's demonstration that this RWWTP meets all nine 301(h) requirements as implemented by regulations contained in 40 CFR Part 125, Subpart G, including compliance with all applicable WQS which assure the protection and propagation of a BIP of fish, shellfish and wildlife, in the vicinity of the ocean outfall. However, if the commenter chooses to challenge EPA's final decision, within the (30) day period after the date of service of the final Aguadilla 301(h) determination, the final Aguadilla 301(h) modified permit decision may be appealed by the filing of a notice of appeal and petition for review with the EPA's Environmental Appeals

Board (EAB) in accordance with 40 CFR 124.19.

Any person who filed comments on the draft permit or participated in the public hearing may file the above referenced notice of appeal and petition for review to the EAB within those thirty (30) days to review any condition of the permit decision. Any person who failed to file comments or failed to participate in the public hearing on the draft may appeal for review only to the extent of the changes from the draft to the final permit decision. The 30 day-period within which a person may request review begins with service of this notice of the EPA Region 2 final permit decision.

The original and one copy of all requests for appeal of the final permit decisions must be addressed to:

United States Environmental Protection Agency
Environmental Appeals Board (MC-1103B)
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

A copy of the request must be sent to:

Patrick J. Harvey, Chief
Compliance Assistance and Program Support Branch
United States Environmental Protection Agency- Region II
290 Broadway, 21st Floor
New York, New York 10007-1866

107. Comment: An extension of the public comment period was requested, in order to allow sufficient time to review all pertinent documents used in EPA's 301(h) decision.

107. EPA Response: EPA granted an extension of the public comment period. The proposed Aguadilla RWWTP 301(h) decision approval was public noticed on August 21, 2000, a public hearing was held on September 21, 2000 and the comment was due to close on October 5, 2000. However, based on a request, the public comment period was extended to November 6, 2000. EPA believes it has provided sufficient time for all interested parties to provide comments.

108. Comment: EPA should enforce the law and protect the environment.

108. EPA Response: **EPA intends to enforce all sections of the CWA, including Section 301(h). By enforcing the CWA, EPA is fulfilling its mandate to protect, maintain and improve water quality in all waters of the United States, including those of Puerto Rico. EPA's approval of the Aguadilla RWWTP 301(h) modification from the requirements of secondary treatment is based on the applicant's demonstration that this RWWTP meets all**

nine Section 301(h) requirements as implemented by regulations contained in 40 CFR Part 125, Subpart G, including compliance with all applicable WQS which assure the protection and propagation of a BIP of fish, shellfish and wildlife, in the vicinity of the ocean outfall.

109. Comment: The MOA to voluntarily achieve secondary treatment between the Government of Puerto Rico and EPA is not enforceable. PRASA will never build secondary treatment facilities and will not comply with the CWA.

109. EPA Response: EPA agrees that the August 10, 2000 "Memorandum of Agreement to Voluntarily Achieve Secondary Treatment between the Government of Puerto Rico and the U.S. EPA, Region 2" is a voluntary agreement. The MOA commits EPA and the Government of Puerto Rico to voluntarily upgrade to secondary treatment "...even if continuing discharges at less than full secondary treatment are shown to fully protect public health and the environment, including essential fish habitat, the Parties still intend to work cooperatively to upgrade these discharges, over time , to full secondary treatment, as Federal capital funds are made available."

The voluntary achievement of secondary treatment at the Aguadilla RWWTP would only further improve water quality. In the interim, PRASA will be required by the 301(h) modified permit to continue post waiver monitoring and EPA will continue to assess the Aguadilla RWWTP's compliance with Section 301(h) requirements.

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ATTACHMENT 1

LIST OF COMMENTERS WHO SUBMITTED COMMENTS ON THE AGUADILLA RWWTP'S SECTION 301(H) DECISION AND NPDES PERMIT DURING THE PUBLIC COMMENT AND HEARING PERIODS.

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ATTACHMENT 2

CORAL COMMUNITY MONITORING STATIONS FOR THE AGUADILLA RWWTP 301(H) WAIVER MONITORING PROGRAM..